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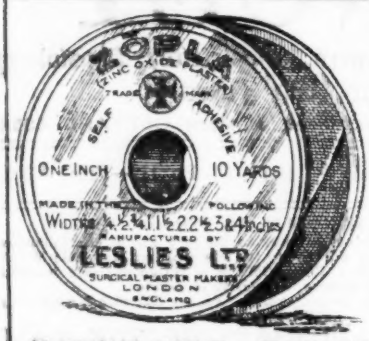

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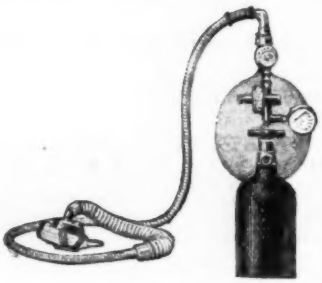

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Our story now commences, not at the close of a historical flood, but at the end of a geological epoch so distant from us that we cannot compute its date with any degree of accuracy. Shem, Ham, and Japheth, the reputed ancestors of the three great racial stocks of modern times—the white, black, and yellow distinctive types of mankind—have also disappeared from our speculations; we no longer look out on the world and believe that the patterns which stud the variegated carpet of humanity were all woven at the same time; some of the patterns, we believe, are of ancient date and have retained many of the features which marked the "common ancestral" design; others are of more recent date, having the ancient pattern altered in many of its details.

We have called in, as Darwin has taught us, the whole machinery of evolution—struggle for existence, survival of the fittest, spontaneous origin of structural variations, the inheritance of such variations—as the loom by which Nature fashions her biological patterns. We have replaced the creative finger by the evolutionary machine, but no one is more conscious of the limitations of that machine than the student of human races.

We are all familiar with the features of that racial human type which clusters round the heart of Africa; we recognise the Negro at a glance by his black, shining, hairless skin, his crisp hair, his flattened nose, his widely opened dark eyes, his heavily moulded lips, his gleaming teeth and strong jaws. He has a carriage and proportion of body of his own; he has his peculiar quality of voice and action of brain. He is, even to the unpractised eye, clearly different from the Mongolian native of North-Eastern Asia; the skin, the hair, the eyes, the quality of brain and voice, the carriage of body and proportion of limb to body pick out the Mongol as a sharply differentiated human type. Different from either of these is the native of Central Europe—the Aryan or Caucasian type of man; we know him by the paleness of his skin and by his facial features—particularly his narrow, prominent nose and thin lips. We are so accustomed to the prominence of the Caucasian nose that only a Mongol or Negro can appreciate its singularity in our aryanised world. When we ask how these three types—the European, Chinaman, and Negro—came by their distinctive features, we find that our evolutionary machine is defective; the processes of natural and of sexual selection will preserve and exaggerate traits of body and of mind, but they cannot produce that complex of features which marks off one racial type from another. Nature has at her command some secret mechanism by which she works out her new patterns in the bodies of man and beast—a mechanism of which we were almost ignorant in Darwin's day, but which we are now beginning to perceive and dimly understand. It is the bearing of this creative or morphogenetic mechanism on the evolution of the modern races of mankind which I propose to make the subject of my address.

THE ENDOCRINE GLANDS AS GROWTH-CONTROLLING STRUCTURES.

Hid away in various parts of the human frame is a series of more or less obscure bodies or glands, five in number, which, in recent times, we have come to recognise as parts of the machinery which regulate the growth of the body. They form merely a fraction of the body—not more than 1/180th part of it; a man might pack the entire series in his watch-pocket. The modern medical student is familiar with each one of them—the pituitary body, about the size of a ripe cherry, attached to the base of the brain and cradled in the floor of the skull; the pineal gland, also situated in the brain, and in point of size but little larger than a wheat-grain; the thyroid in the neck, set astride the windpipe, forms a more bulky mass; the two suprarenal bodies situated in the belly, capping the kidneys, and the interstitial glands embedded within the substance of the testicle and ovary, complete the list. The modern physician is also familiar with the fact that the growth of the body may be retarded, accelerated, or completely altered if one or more of these glands become the seat of injury or of a functional disorder.

Acromegaly and Giantism.

It is 33 years now since first one woman and then another came to Dr. Pierre Marie in Paris seeking relief from a persistent headache, and mentioning incidentally that their faces, bodies, hands, and feet had altered so much in recent years that their best known friends failed to recognise them. That incident marked the commencement of our knowledge of the pituitary gland as an intrinsic part of the machinery which regulates the shaping of our bodies and features. Dr. Marie named the condition acromegaly. Since then hundreds of men and women showing symptoms similar to those of Dr. Marie's patients have been seen and diagnosed, and in every instance where the acromegalic changes were typical and marked there has been found a definite enlargement or tumour of the pituitary body. The practised eye recognises the full-blown condition of acromegaly at a glance, so characteristic are the features of the sufferers. Nay, as we walk along the streets we can note slight degrees of it—degrees which fall far short of the border-line of disease; we note that it may give characteristic traits to a whole family—a family marked by what may be named an acromegalic taint.

The pituitary gland is also concerned in another disturbance of growth—giantism. In every case where a young lad has shot up, during his late "teens," into a lanky man of seven feet or more—has become a giant—it has been found that his pituitary gland was the site of a disordered enlargement. The pituitary is part of the mechanism which regulates our stature, and stature is a racial characteristic. The giant is usually acromegalic as well as tall, but the two conditions need not be combined; a young lad may undergo the bodily changes which characterise acromegaly and yet not become abnormally tall, or he may become—although this is rarely the case—a giant in stature and yet may not assume acromegalic features.

There is a third condition of disordered growth in which the pituitary is concerned—one in which the length of the limbs is disproportionately increased—in which the sexual system and all the secondary sexual characters of body and mind either fail to develop or disappear—where fat tends to be deposited on the body, particularly over the buttocks and thighs—where, in brief, a eunuchoid condition of body develops.

In all of these three conditions we seem to be dealing with a disordered and exaggerated action of the pituitary gland; there must be conditions of an opposite kind where the functions of the pituitary are disordered and reduced. A number of cases of dwarfism have been recorded where boys or girls retained their boyhood or girlhood throughout life, apparently because their pituitary gland had been invaded and partly destroyed by tumours. We shall see that dwarfism may result also from a failure of the thyroid gland. On the evidence at our disposal, evidence which is being rapidly augmented, we are justified in regarding the pituitary gland as one of the principal pinions in the machinery which regulates the growth of the human body and is directly concerned in determining stature, cast of features, texture of skin, and character of hair—all of them marks of race. When we compare the three chief racial types of humanity—the Negro, the Mongol, and the Caucasian or European—we can recognise in the last named a greater predominance

of the pituitary than in the other two. The sharp and pronounced nasalisation of the face, the tendency to strong eyebrow ridges, the prominent chin, the tendency to bulk of body and height of stature in the majority of Europeans, are best explained, so far as the present state of our knowledge goes, in terms of pituitary function.

The Genital Glands in Relation to Growth.

There is no question that our interest in the mechanism growth has been quickened in recent years by observations and discoveries made by physicians on men and women who suffered from pituitary disorders, but that a small part of the body could influence and regulate the growth and characterisation of the whole was known in ancient times. For many centuries it has been common knowledge that the removal of the genital glands alters the external form and internal nature of man and beast. The sooner the operation is performed after birth the more certain are its effects. Were a naturalist from a unisexual world to visit this earth of ours it would be difficult to convince him that a brother and a sister were of the same species, or that the wrinkled, sallow-visaged eunuch with his beardless face, his long tapering limbs, his hesitating carriage, his carping outlook and corpulent body, was brother to the thick-set, robust, pugilistic man with the bearded face.

The discovery that the testicle and ovary contain, scattered throughout their substance, a small glandular element which has nothing to do with their main function —the production of genital cells—was made 70 years ago, but the evidence which leads us to believe that this scattered element—the interstitial gland—is directly concerned in the mechanism of growth is of quite recent date. All those changes which we may observe in the girl or boy at puberty —the phase of growth which brings into full prominence their racial characteristics—depend on the action of the interstitial glands. If they are removed or remain in abeyance the maturation of the body is both prolonged and altered. In seeking for the mechanism which shapes mankind into races we must take the interstitial gland into our reckoning. I am of opinion that the sexual differentiation—the robust manifestations of the male characters—is more emphatic in the Caucasian than in either the Mongol or Negro racial types. In both Mongol and Negro, in their most representative form, we find a beardless face and almost hairless body, and in certain Negro types, especially in Nilotic tribes, with their long, stork-like legs, we seem to have a manifestation of abeyance in the action of the interstitial glands. At the close of sexual life we often see the features of a woman assume a coarser and more masculine appearance.

The Suprarenal Bodies.

Associated with the interstitial glands, at least in point of development, are the suprarenal bodies or glands. Our knowledge that these two comparatively small structures, no larger than the segments into which a moderately sized orange can be separated, are connected with pigmentation of the skin dates back to 1894, when Dr. Thomas Addison, a physician to Guy's Hospital, London, observed that gradual destruction of these bodies by disease led to a darkening or pigmentation of the patient's skin, besides giving rise to other more severe changes and symptoms. Now it is 150 years since John Hunter came to the conclusion, on the evidence then at his disposal, that the original colour of man's skin was black, and all the knowledge that we have gathered since his time supports the inference he drew. From the fact that pigment begins to collect in and thus darken the skin when the suprarenal bodies become the seat of a destructive disease we infer that they have to do with the clearing away of pigment, and that we Europeans owe the fairness of our skins to some particular virtue resident in the suprarenal bodies.

That their function is complex and multiple the researches of Sharpey-Schafer, of T. R. Elliott, and of W. B. Cannon have made very evident. Fifteen years ago Bulloch and Sequeira established the fact that when a suprarenal body becomes the site of a peculiar form of malignant overgrowth in childhood the body of the boy or girl undergoes certain extraordinary growth changes. The sexual organs became rapidly mature, and through the framework of childhood burst all the features of sexual maturity—the full chest, muscularity of limbs, bass voice, bearded face, and hairy body—a miniature Hercules—a miracle of transformation in body and brain. Corresponding changes occur in young girls—almost infants in years—with a tendency to assume features which characterise the male. Professor E. E. Glynn[1] has recently collected such cases and systematised our knowledge of these strange derangements of growth.

There can be no doubt that the suprarenal bodies constitute an important part of the mechanism which regulates the development and growth of the human body and helps in determining the racial characters of mankind. We know that certain races come more quickly to sexual maturity than others, and that races vary in development of hair and of pigment, and it is therefore reasonable to expect a satisfactory explanation of these characters when we have come by a more complete knowledge of the suprarenal mechanism.

The Pineal Gland.

During the last few years the totally unexpected discovery has been sprung upon us that disease of the minute pineal gland of the brain may give rise to a train of symptoms very similar to those which follow tumour formation of the cortex of the suprarenal bodies. In some instances the sudden sexual prematurity which occurs in childhood is apparently the immediate result of a tumour-like affection of the pineal gland. We have hitherto regarded the pineal gland, little bigger than a wheat-grain and buried deeply in the brain, as a mere useless vestige of a median or parietal eye, derived from some distant human ancestor in whom that eye was functional, but on the clinical and experimental evidence now rapidly accumulating we must assign to it a place in the machinery which controls the growth of the body.

The Thyroid Gland.

We come now to deal with the thyroid gland, which, from an anthropological point of view, must be regarded as the most important of all the organs or glands of internal secretion. Here, too, in connexion with the thyroid gland, which is situated in the front of the neck, where it is so apt to become enlarged and prominent in women—I must call attention to a generalisation which I slurred over when speaking of the pituitary and suprarenal glands. Each of these glands throws into the circulating blood two sets of substances—one set to act immediately in tuning the parts of the body which are not under the influence of the will to the work they have to do when the body is at rest and when it is making an effort. Another set of substances—which Professor Gley has named morphogenetic—has not an immediate but a remote effect; they regulate the development and coördinate the growth of the various parts of the body.

Now, so far as the immediate function of the thyroid is concerned, our present knowledge points to the gland as the manufactory of a substance which, when circulating in the body, regulates the rate of combustion of the tissues. When we make a muscular effort, or when our bodies are exposed to cold, or when we become the subjects of infection, the thyroid is called upon to assist in mobilising all available tissue-fuel. If we consider only its immediate function it is clear that the thyroid is connected with the selection and survival of human races. When, however, we consider its remote or morphogenetic effects on growth its importance as a factor in shaping the characteristics of human races becomes even more evident. In districts where the thyroid is liable to that form of disease known as goitre it has been known for many a year that children who were affected became cretins—dwarf idiots with a very characteristic appearance of face and body.[2]

Disease of the thyroid stunts and alters the growth of the body, so that the subjects of this disorder might well be classed as a separate species of humanity. If the thyroid becomes diseased and defective after growth of the body is completed, then certain changes, first observed by Sir William Gull in 1873, are set up and give rise to the disordered state of the body known as myxœdema. "In this state," says Sir Malcom Morris,[3] "the skin is cold, dry and rough, seldom or never perspires, and may take on a *yellowish* tint; there is a bright-red flush in the malar

[1] Quart. Journ. of Med., 1912, vol. v., p. 157.
[2] The story of the discovery of the action of the thyroid gland is told by Professor G. M. Murray, Brit. Med. Jour., 1913, ii., 163.
[3] Brit. Med. Jour., 1913, i., 1033.

region. The skin as a whole looks transparent; the hair of the scalp becomes scanty; the pubic and axillary hair, with the eyelashes and eyebrows, often falls out; in many cases the teeth are brittle and carious. All these appearances disappear under the administration of thyroid extract."

We have here conclusive evidence that the thyroid acts directly on the skin and hair, just the structures we employ in the classification of human races. The influence of the thyroid on the development of the other systems of the body, particularly on the growth of the skull and skeleton, is equally profound. This is particularly the case as regards the base of the skull and the nose. The arrest of growth falls mainly on the basal part of the skull, with the result that the root of the nose appears to be flattened and drawn backwards between the eyes, the upper forehead seems projecting or bulging, the face appears flattened, and the bony scaffolding of the nose, particularly when compared to the prominence of the jaws, is greatly reduced.

Now these facial features which I have enumerated give the Mongolian face its characteristic aspect, and, to a lesser degree, they are also to be traced in the features of the Negro. Indeed, in one aberrant branch of the Negro race—the Bushman of South Africa—the thyroid facies is even more emphatically brought out than in the most typical Mongol. You will observe that, in my opinion, the thyroid—or a reduction or alteration in the activity of the thyroid—has been a factor in determining some of the racial characteristics of the Mongol and the Negro races. I know of a telling piece of evidence which supports this thesis. Some years ago there died in the East End of London a Chinese giant—the subject, we must suppose, of an excessive action of the pituitary gland—the gland which I regard as playing a predominant part in shaping the face and bodily form of the European. The skeleton of this giant was prepared and placed in the museum of the London Hospital Medical College by Colonel T. H. Openshaw, and any one inspecting this skeleton can see that, although certain Chinese features are still recognisable, the nasal region and the supra-orbital ridges of the face have assumed the more prominent European type.

Achondroplasia and Mongolism.

There are two peculiar and very definite forms of dwarfism with which most people are familiar, both of which must be regarded as due to a defect in the growth regulating mechanism of the thyroid. Now, one of these forms of dwarfism is known to medical men as achondroplasia, because the growth of cartilage is particularly affected, but in familiar language we may speak of the sufferers from this disorder of growth as being of the "bulldog breed" or of the "dachshund breed." In the dachshund the limbs are greatly shortened and gnarled, but the nose or snout suffers no reduction, while in the bulldog the nose and nasal part of the face are greatly reduced and withdrawn, showing an exaggerated degree of Mongolism. Among achondroplastic human dwarfs both breeds occur, but the "bulldog" form is much more common than the "dachshund" type. The shortening of limbs with retraction of the nasal region of the face—pug-face or prosopia we may call the condition—has a very direct interest for anthropologists, seeing that short limbs and a long trunk are well-recognised racial characteristics of the Mongol.

In the second kind of dwarfism, which we have reason to regard as due to a functional defect of the thyroid, the Mongolian traits are so apparent that the sufferers from this disorder are known to medical men as "Mongolian idiots," for not only is their growth stunted, but their brains also act in a peculiar and aberrant manner. Dr. Langdon Down, who gave the subjects of this peculiar disorder the name "Mongolian idiots" 55 years ago, knew nothing of the modern doctrine of internal secretions, but that doctrine has been applied in recent years by Dr. F. G Crookshank [4] to explain the features and condition of Mongoloid imbecile children.

Some years ago [5] I brought forward evidence to show that we could best explain the various forms of anthropoid apes by applying the modern doctrine of a growth-controlling glandular mechanism. In the gorilla we see the effects of a predominance of the pituitary elements; in the orang, of the thyroid. The late Professor Klaatsch tried to account for the superficial resemblances between the Malay and the orang by postulating a genetic relationship between them; for a similar reason he derived the Negro type from a gorilline ancestry. Occasionally we see a man or woman of supposedly pure European ancestry displaying definite Mongoloid traits in their features.

We have been in the habit of accounting for such manifestations by the theory, at one time very popular, that a Mongoloid race had at one time spread over Europe, and that Mongoloid traits were atavistic recurrences. An examination of the human remains of ancient Europe yields no evidence in support of a Turanian or Mongol invasion of Europe.

THE MECHANISM OF THE CONTROL OF GROWTH.

All of these manifestations to which I have been calling your attention—the sporadic manifestation of Mongoloid characters in diseased children and in healthy adult Europeans, the generic characters which separate one kind of ape from another, the bodily and mental features which mark the various races of mankind—are best explained by the theory I am supporting—namely, that the conformation of man and ape and of every vertebrate animal is determined by a common growth-controlling mechanism which is resident in a system of small but complex glandular organs. We must now look somewhat more closely into the manner in which this growth-regulating mechanism actually works.

That we can do best by taking a glimpse of a research carried out by Bayliss and Starling in the opening years of the present century. They were seeking to explain why it was that the pancreas poured out its digestive juice as soon as the contents of the stomach commenced to pass into the first part of the duodenum. It was then known that if acid was applied to the lining epithelial membrane of the duodenum, the pancreas commenced to work; it was known also that the message which set the pancreas into operation was not conveyed from the duodenum to the pancreas by nerves, for when they were cut the mechanism was still effective. Bayliss and Starling solved the puzzle by making an emulsion from the acid-soaked lining epithelium of the duodenum and injecting the extract of that emulsion into the circulating blood. The result was that the pancreas was immediately thrown into activity. The particular substance which was thus set circulating in the blood and acted on the pancreas and on the pancreas alone, and which thus served as a messenger or hormone, they named secretin. They not only cleared up the mechanism of pancreatic secretion, but at the same time made a discovery of much greater importance. They had discovered a new method whereby one part of the human body could communicate with and control another.

The Theory of Hormones.

Up to that time we had been like an outlandish visitor to a strange city, who believed that the visible telegraph or telephone wires were the only means of communication between its inhabitants. We believed that it was only by nerve fibres that intercommunication was established in the animal body. Bayliss and Starling showed that there was a postal system. Missives posted in the general circulation were duly delivered at their destinations. The manner in which they reached the right address is of particular importance for us; we must suppose that the missive or hormone circulating in the blood and the recipient for which they are intended have a special attraction or affinity for each other—one due to their physical constitution—and hence they, and only they, come together as the blood circulates round the body.

Secretin is a hormone which effects its errand rapidly and immediately, whereas the growth or morphogenetic hormones, thrown into the circulation by the pituitary, pineal, thyroid, suprarenals, and genital glands, act slowly and remotely. But both are alike in this: the result depends not only on the nature of the hormone or missive, but also on the state of the local recipient. The local recipient may be specially greedy, as it were, and seize more than a fair share of the manna in circulation, or it may have "sticky fingers" and seize what is not really intended for local consumption.

We can see that local growth—the development of a particular trait or feature—is dependent not only on the hormones supplied to that part, but also on the condition of the receptive mechanism of the part. Hence we can understand a local derangement of growth—an acromegaly or giantism confined to a finger or to the eyebrow ridges, to the nose, to one side of the face, and such local manifestations

[4] The Universal Medical Record, 1913, vol. iii., 12.
[5] Jour. of Anat. and Physiol., 1913.

are not uncommon. It is by a variation in the sensitiveness of the local recipient that we have an explanation of the endless variety to be found in the relative development of racial and individual features.

Regulation of Muscular Effort.

Some ten years after Starling had formulated the theory of hormones Professor W. B. Cannon, of Harvard University, piecing together the results of researches by Dr. T. R. Elliott and by himself on the action of the suprarenal glands, brought to light a very wonderful hormone mechanism—one which helps us in interpreting the action of growth-regulating hormones. When we are about to make a severe bodily effort it is necessary to flood our muscles with blood, so that they may have at their disposal the materials necessary for work—oxygen and blood-sugar—the fuel of muscular engines.

At the beginning of a muscular effort the suprarenal glands are set going by messages passing to them from the central nervous system; they throw a hormone—adrenalin—into the circulating blood, which has a double effect; adrenalin acts on the flood-gates of the circulation, so that the major supply of blood passes to the muscles. At the same time it so acts on the liver that the blood circulating through that great organ becomes laden with blood-sugar.

We here obtain a glimpse of the neat and effective manner in which hormones are utilised in the economy of the living body. From that glimpse we seem to obtain a clue to that remarkable disorder of growth in the human body known as acromegaly. It is a pathological manifestation of an adaptational mechanism with which we are all familiar. Nothing is better known to us than that our bodies respond to the burden they are made to bear. Our muscles increase in size and strength the more we use them; increase in the size of our muscles would be useless unless our bones also were strengthened to a corresponding degree. A greater blood-supply is required to feed them, and hence the power of the heart has to be augmented; more oxygen is needed for their consumption, and hence the lung capacity has to be increased; more fuel is required—hence the whole digestive and assimilative systems have to undergo a hypertrophy, including the apparatus of mastication.

Such a power of coördinated response on the part of all of the organs of the body to meet the needs of athletic training, presupposes a coördinating mechanism. We have always regarded such a power of response as an inherent property of the living body, but in the light of our growing knowledge it is clear that we are here dealing with a hormonic mechanism, one in which the pituitary gland is primarily concerned.

Production of Acromegaly.

When we study the structural changes which take place in the first phase of acromegaly,[6] we find that not only are the bones enlarged and overgrown in a peculiar way, but so are the muscles, the heart, the lungs, the organs of digestion, particularly the jaws; hence the marked changes in the face, for the form of the face is determined by the development of the upper and lower jaws. The rational interpretation of acromegaly is that it is a pathological disorder of the mechanism of adaptational response; in the healthy body the pituitary is throwing into the circulation just a sufficiency of a growth-regulating substance to sensitise muscles, bones, and other structures to give a normal response to the burden thrown on the body. But in acromegaly the body is so flooded with this substance that its tissues become hypersensitive and respond by overgrowth to efforts and movements of the slightest degree. It is not too much to expect, when we see how the body and features become transformed at the onset of acromegaly, that a fuller knowledge of these growth mechanisms will give us a clue to the principles of race differentiation.

THE PATH OF FUTURE INQUIRY.

There must be many other mechanisms regulated by hormones with which we are as yet totally unacquainted. I will cite only one instance—that concerned in regulating the temperature of the body. We know that the thyroid and also the suprarenal glands are concerned in this mechanism; they have also to do with the deposition and absorption of pigment in the skin, which must be part of the heat-regulating mechanism. It is along such a path of inquiry that we expect to discover a clue to the question of race colour.

[6] See Keith, THE LANCET, 1911, ii., 993; 1913, i., 305.

This is not the first occasion in which the doctrine of hormones has been applied to biological problems of the British Association. In his Presidential address to the Zoological Section at Sheffield in 1910 Professor G. C. Bourne applied the theory to the problems of evolution: its bearing was examined in more detail in an address to the same section by Professor Arthur Dendy during the meeting at Portsmouth in 1911. At the meeting of the Association at Newcastle in 1916 Professor MacBride devoted part of his address to the morphogenetic bearings of hormones. Very soon after Starling formulated the hormone theory, Dr. J. T. Cunningham applied it to explain the phenomena of heredity.[7] Nay, rightly conceived, Darwin's theory of Pan-genesis is very much of the same character as the modern theory of hormones.

"HETEROSEROTHERAPY" IN PULMONARY TUBERCULOSIS.

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AN attack of acute pleurisy with serous effusion occurring in the course of chronic pulmonary tuberculosis, with subsequent spontaneous absorption of the effused fluid, is followed not infrequently by a prolonged period of improved health and a marked amelioration of pre-existing symptoms. This improvement has been ascribed to the mechanical action of the effusion in compressing and immobilising the subjacent lung, an action comparable to that of gas artificially introduced into the pleural cavity for this purpose or to that of the accumulated serous fluid in a case of hydro-pneumothorax. This explanation seems doubtful in view of the fact that the duration of an intercurrent attack of pleurisy with effusion is usually limited to a period of three weeks, sometimes less. It entirely fails to explain the improvement witnessed in those cases where the effusion has occurred on the side of the sounder or (in instances of unilateral disease) the apparently sound lung.

Of late years the treatment of tuberculous serous pleural effusion has become more conservative and paracentesis is reserved by many for those cases where the accumulated fluid is dangerous in virtue of its bulk or where natural absorption is unduly delayed. In fact, it is becoming recognised that the patient gains "something" from his effusion; it is difficult to be more explicit.

One of us (W. O. M.)[1] has pointed out elsewhere that the amount of specific antibody (as estimated by means of the "complement-fixation reaction") in the blood-serum of a consumptive individual may show marked fluctuations during an intercurrent attack of acute pleurisy with effusion. R. C. Paterson,[2] whose work throws fresh light on the subject of the tuberculous serous effusion, concludes that "clinical pleural effusions are caused by the infection of an allergic pleura." V. Gilbert[3] of Geneva, in 1896, published details of the treatment of sero-fibrinous pleurisy by "autoserotherapy." He advocated the withdrawal of a small amount of fluid from the pleural cavity and the inoculation of 2 c.cm. into the patient's own subcutaneous tissue. He stated that this procedure was followed by (*a*) a reaction evidenced by a transient rise of temperature of 1°–2°, (*b*) increased diuresis with a fall of temperature, and (*c*) rapid absorption of the effusion in from six to ten days. A. Jousset,[4] in 1912, while not admitting the value of "autoserotherapy," suggested the employment of "heteroserotherapy" in the treatment of chronic tuberculous pleurisy, stating that tuberculous pleural effusion fluid may be protective to guinea-pigs. He recommended that the fluid withdrawn from cases of acute serofibrinous pleurisy should be allowed to clot and the serum be pipetted off and sterilised by heating to 55° C. on three successive days. This sterile serum was to be employed in doses of from 20–50 g., by subcutaneous inoculation, in the treatment of other patients suffering from chronic tuberculous pleurisy.

[7] Dr. J. T. Cunningham, Proc. Zoo. Soc., London, 1908, p. 434.

Details of Treatment.

In 1917-18 we employed the method of "heteroserotherapy" in the treatment of a few cases of pulmonary tuberculosis. The following is a brief account of our experience:—

Source of the tuberculous effusion fluid employed.—Fluid from five cases of pleurisy was used: (*a*) Two cases of "primary" tuberculous pleurisy with effusion, from the wards of St. Thomas's Hospital, diagnosed on clinical grounds and on cytological examination of the aspirated fluid. (*b*) Three cases of acute pleurisy with effusion complicating "open" pulmonary tuberculosis in patients at the Frimley Sanatorium.

Collection and preparation of the fluid.—The effused fluid was withdrawn from the "donors'" chests by the usual method, with aseptic precautions, into flasks containing a 2 per cent. solution of sodium citrate in normal saline, the final proportion of pleural fluid to citrated saline being roughly as 3 to 1. The fluid was examined cytologically, and in some instances a rough estimation of the number of lymphocytes to the cubic centimetre was made. Sterilisation was effected by adding to the fluid one-tenth its volume of a 5 per cent. solution of carbolic acid, the addition being made gradually with constant stirring. Even so, some coagulum forms, but it is small in amount and, if the fluid is shaken before use, the slight flocculent deposit is insufficient to block a moderately stout hypodermic needle. Finally, the fluid was stored in the cold in convenient hermetically sealed vessels. From the above it will be seen that all the constituents of an unheated effusion were employed for inoculation.

Dosage.—The fluid was administered by inoculation into the subcutaneous tissues. For obvious reasons the initial dose was small (1-2 c.cm.). The amount was increased gradually up to 10, 15, or even 25 c.cm. At the commencement of a course of injections they were given twice or three times weekly; when the larger doses were reached, as a rule at weekly intervals. The injections never caused any disquieting symptoms. Occasionally a transient small rise was noted in the evening temperature on the day of administration. This occurred with some regularity in Case C alone of the eight cases treated. In another instance, where the temperature had fallen to normal during treatment, a dose was sometimes followed by an evening temperature of 99° F. In no instance was a sudden marked rise of temperature, comparable to that produced by an overdose of tuberculin, witnessed. Where improvement in the patient's condition coincided with the administration of the pleural fluid, it was most marked when a dose of about 10 c.cm. had been reached.

Selection of cases for treatment.—As will be seen from the subjoined clinical abstracts, all the cases treated, with the exception of D, had extensive active disease of the lungs, and in all, with the same exception, the outlook seemed very grave. The patients, C, G, and H appeared to us to be moribund at the time treatment was commenced. All, except Case C, were undergoing sanatorium treatment at the Frimley Sanatorium and had been there for some months previous to the administration of the pleural fluid. In every instance tubercle bacilli were present in the patient's sputum.

Details of Cases Treated.

(A) Male, 39, eight years' history. Admitted June 6th, 1917. Extensive active bilateral disease and extensive laryngeal ulceration. Evening temperature 100°-101° F. Very distressing laryngeal symptoms. Rest in bed for two months effected no improvement, and his condition steadily deteriorated. On August 13th injections of pleural fluid were commenced with a dose of 1 c.cm. gradually increased up to 15 c.cm. by the end of September and continued until Oct. 16th, when they were omitted. During this period the temperature fell gradually and remained about normal, the laryngeal symptoms disappeared in a remarkable manner, the patient gained some weight and was well enough to be up and about. His condition remained satisfactory until Nov. 22nd, when the temperature again rose to 100° F. Injections of 10 c.cm. of pleural fluid were recommenced and continued until the patient was discharged on May 8th, 1918. During the second course of injections the temperature fell rapidly and remained satisfactory, not reaching 100° F. again, and only twice exceeding 99° F. He returned to light work at his home and reported in August, 1919, that he had been constantly at work with continued improvement in his health.

(B) Male, 21, 12 months' history. Signs of active disease throughout the right lung, with infiltration of the upper lobe of the left lung. Admitted May 2nd, 1917. Evening temperature about 100° F. After 10 weeks' rest in bed the general condition showed no improvement and the temperature was higher. On July 19th a right-sided artificial pneumothorax was induced, and compression of the lung kept up until August 24th. The lung collapsed readily, and the pneumothorax was apparently complete. (No X ray examination.) This having no effect upon the pyrexia or other symptoms, injections of pleural fluid (1 c.cm.) were commenced on August 13th. The amount was increased gradually up to 25 c.cm. on Nov. 5th, on which date the injections were discontinued. The temperature began to fall when a dose of 7 c.cm. was reached, and after a few doses of 10 c.cm. rapidly assumed a more favourable type, being practically normal by Sept. 27th, and from this date until Nov. 20th rarely exceeded 99° F. and was never higher than 99·4° F. During this period the patient gained 12 lb. in weight, was able to get up for most of the day, and the symptoms and general condition were improved. On Nov. 20th, 21st, and 22nd the evening temperature was 99° or 99·2° F., and injections of 10 c.cm. of pleural fluid were recommenced and continued until Feb. 8th, 1918. During this time the temperature remained satisfactory, weight was maintained, and the patient was well enough to be up all day and to take exercise. He relapsed subsequent to discharge, and in June, 1919, was reported to be going downhill.

(C) Male, 16, two months' history. Seen Feb. 12th, 1918. Acute caseous tuberculosis of both lungs. Tuberculous laryngitis. Pyrexia (temperature up to 103° F.). After two months' rest in bed the temperature improved (ranging up to 100° or 101° F.), he had gained a few pounds in weight, and the general condition, while still grave, showed slight improvement. Between April 7th and June 12th he had 23 doses of pleural fluid from 2 to 10 c.cm. During this period the temperature fell further, the general condition improved, he gained 10 lb. in weight, and became well enough to go to a sanatorium. Subsequently the laryngeal disease increased, and he died about Christmas, 1918. In this case the administration of the earlier doses of pleural fluid was followed frequently by a slight elevation of temperature with a subsequent fall.

(D) Male, 48. Admitted Dec. 28th, 1916. Seven years' history. Chronic tuberculosis of right lung. Recent activity. Slight pyrexia and constant hæmoptysis of small amount. In March, 1917, acute bilateral tubercular epididymitis developed. One testicle was removed in April and the second in June. This was followed by a prolonged period of slight pyrexia, with occasional rises of temperature to 100° or 101° F., and persistent slight hæmoptysis. From Dec. 24th, 1917, to May 3rd, 1918, he had 35 injections of pleural fluid in doses of from 2 to 10 c.cm. (346 c.cm. in all). By February the temperature had fallen to 98·4° F. or below, and thereafter remained stable. The hæmoptysis ceased at the end of this month and did not recur. The pulmonary symptoms were reduced to a minimum, and in May he was well enough to resume active work and has remained well ever since.

(E) Male, 24. Admitted May 16th, 1917. A few weeks' history.—Acute bilateral disease. Continuous pyrexia and frequent hæmoptysis. By November the general condition had improved slightly, the evening temperature ranging up to 101° F. From Nov. 13th, 1917, to March 1st, 1918, he had 35 inoculations of pleural fluid (300 c.cm. in all). During the administration the temperature fell and remained much more stable, though he did not become actually afebrile. (Average evening temperature 99° F.) The improvement in general health was marked. In April, 1918, a prolonged period of fever set in and the temperature remains unstable at the time of writing, though the improvement in general condition has been maintained.

(F) Male, 23. Admitted Sept. 26th, 1917. Nine months' history. Extensive disease of the right lung and ulceration of the larynx. Slight pyrexia with irregular rises of temperature up to 102° F. From Nov. 21st, 1917, to Jan. 15th, 1918, had 18 injections of pleural fluid (1 c.cm. to 10 c.cm.). There was no apparent effect on temperature or general condition. He subsequently improved and reported in June, 1919, that he had returned to America and was in better health.

(G) Male, 47. Admitted Nov. 14th, 1917. Eighteen months' history. Extensive bilateral disease with advanced laryngeal and pharyngeal tuberculosis. Apparently moribund. From Jan. 18th, to Feb. 28th, 1918, had 14 doses of pleural fluid (3 c.cm. to 10 c.cm.). They had no effect, and the patient died in April.

(H) Female, 21. Admitted Nov. 30th, 1917. Eighteen months' history. Extensive bilateral disease. Pyrexia. In February, 1918, there was evidence of marked extension of disease, and the general condition deteriorated. From May 1st to July 5th 12 doses of pleural fluid were given (110 c.cm. in all) with no effect. The patient continued to go rapidly downhill, and died in the winter.

Summary.

In three (F, G, and H) of the above eight cases the administration of the pleural fluid was without any apparent effect upon the symptoms or course of the disease. In two (C and E), where improvement coincided with treatment, it must be admitted that these two patients had shown signs of improvement before it was commenced. Two (A and B) were going steadily downhill in spite of other measures of treatment; in both the use of pleural fluid was followed by rapid and marked improvement, in both the cessation of the injections was followed by a tendency to relapse, and in both renewed improvement followed their resumption. Both these patients received injections of the same pleural fluid (from a case of "primary" tuberculous pleurisy) used within a few weeks of its preparation.

In the remaining case (D), though the patient's general condition was good throughout, troublesome symptoms which had persisted for months disappeared within a few weeks of the administration of the pleural fluid.

While well aware of the difficulty of correlating cause and effect in a case of tuberculosis of the lungs, we are of opinion that the use of "heteroserotherapy" in this disease is worthy of further investigation, and that the results obtained in Cases A, B, and D may be ascribed fairly to the effect of the inoculated pleural fluid.

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THE EARLY TREATMENT OF MENTAL DISORDERS.

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AT the present time, when articles are constantly being published with regard to the extraordinary good results obtained in the treatment of the psychoneuroses in special neurological hospitals, I think it will not be out of place to record the results obtained amongst the psychoses.

The Material Examined.

I am taking my figures from the admissions to the Mental Division of the Lord Derby War Hospital for the first two years. There were during this period 4695 admissions, all of whom were soldiers in a state of acute mental disorder, and by far the majority came from the Expeditionary Forces overseas.

Amongst this vast number of cases of acute mental breakdown all types were met with. Speaking generally, there was nothing very noticeable in the way of symptoms presented to differentiate them from those seen in pre-war experience. I have already recorded the individual types of psychoses met with in a paper published in the *Journal of Mental Science* of July, 1918, and will therefore not enter into the discussion of individual cases in this article.

A survey of the numbers of admissions and discharges at the end of two years' work discloses the fact that the recovery rate stands at 56 per cent., and I think this is sufficiently encouraging to call attention to, seeing that the percentage of recoveries amongst male admissions to county and borough asylums in England for the 10 years 1902 to 1911 inclusive was only 32 per cent.[1] A statistical record of the admissions from the French Expeditionary Force will be found in Table III.

Of the 1000 cases in hospital at the end of two years' admissions only 200 had been resident six months or over, and during this period the deaths totalled only 40, or 0·8 per cent.

Over 330 cases who had developed a mild psychosis under exceptionally trying conditions were considered sufficiently recovered to justify their return to military duty under the proviso that they were kept on home service for 12 months. This step was so far justified that a great number of these ultimately again went to the front, the wisdom of which, however, is a question for speculation.

Review of Treatment Adopted: 1. *Early Observation.*

I propose, therefore, to review the treatment adopted in dealing with this vast number of cases of acute mental disorder.

In the first place, I think an important point is that all were brought under observation at the earliest possible period of their trouble and placed under medical officers with special experience of such conditions. At the same time, this segregation was as far as possible relieved of any stigma. No patient was under any certificate, and no legal formalities had to be gone through before he was placed under the special treatment. As soon as possible, after his condition improved sufficiently, he was allowed parole and all the privileges of a case in the surgical or medical wards of the hospital. The Lord Derby War Hospital was, in fact, a general hospital with medical, surgical, and mental divisions, of which the latter comprised 1000 beds. Apart from the fact, therefore, that his mental condition prevented it, just as a case in the surgical or medical wards might be similarly prevented by his disability, a patient was as soon as possible allowed to mix freely with patients from other parts of the hospital. Any distinction was avoided.

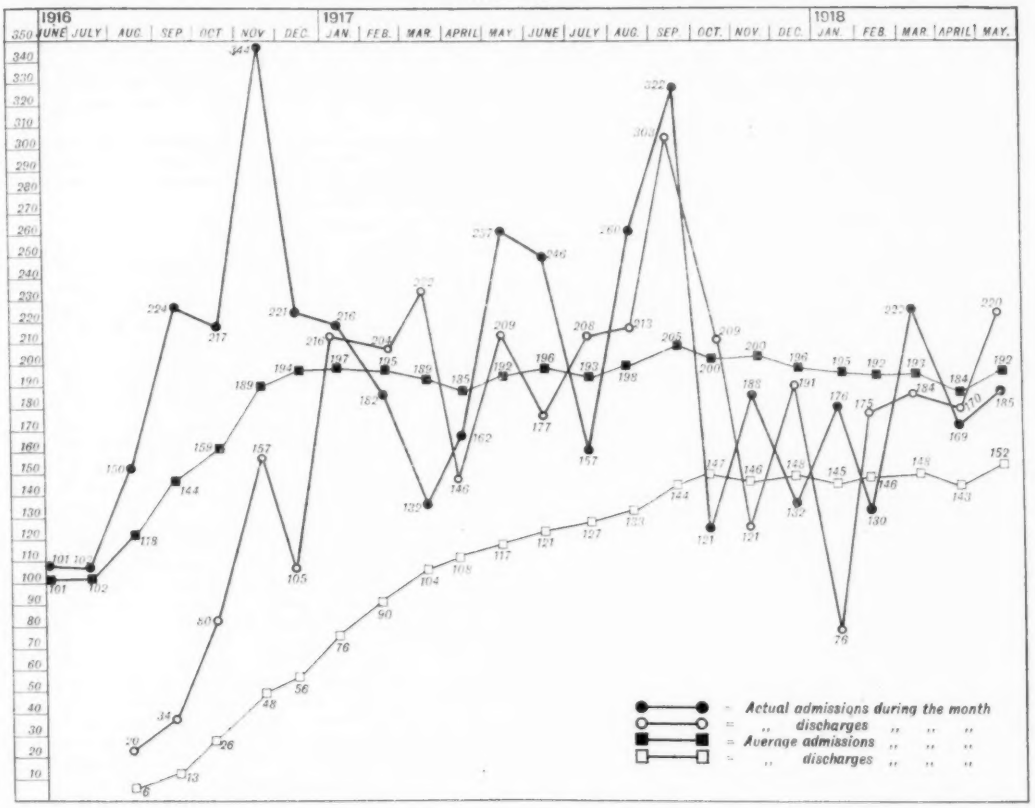
The bringing of these cases under early observation was helped considerably by the facilities in detecting premonitory symptoms. If a soldier in the army, who has been previously up to the average standard, is noticed to be unable to stand properly to attention on parade, or does not form fours properly, or in any other way does not seem up to his usual standard, it is almost certain that this will be reported by his N.C.O. to a superior officer, who will ultimately send him to be examined by the medical officer. Even off duty, when in billets or barracks, he is more or less under observation, and by night more especially so. It is therefore likely that any strange action will be noticed and reported. In civil cases, on the other hand, this early detection of symptoms is much more difficult, and patients are much more likely to be able to conceal their symptoms. This point has been brought out by my colleague, Captain O. P. N. Pearn, R.A.M.C., in his article on the Psychosis in the Expeditionary Forces, recently published in the *Journal of Mental Science*.[2] I feel sure that the patient, as a civilian under present conditions, knows that by disclosing his feelings he will be brought before a medical man, who will probably call in the assistance of a magistrate, that he will deprive him of his freedom, and at the same time subject him to the stigma of certification and all its necessary legal accompaniments. Under such conditions symptoms are concealed as long as possible, and in the early stages, as a rule, the patient does not find much difficulty in "pulling himself together" sufficiently to pass muster in his office as a clerk, or whatever occupation he may perform. In a city he probably does not return home to his midday meal or tea, but has these at a restaurant, where it is no one's business in particular if he does anything strange. He probably returns home late at night, and spends little time in the company of his friends or relations. This sort of thing often goes on for months or even years undetected, until he ultimately commits some act against the conventions of society by which he gets into the hands of the police. In the soldier, on the other hand, as treated during the war, no stigma was attached to the fact that he became insane. He was, as far as practicable, treated as any other casualty, and if he reported his symptoms voluntarily, was taken to a hospital in the same way as if he were suffering from any other illness.

2. *Adequate Medical Staff.*

Another point is the importance of having an adequate medical staff in dealing with cases at this stage. A glance at Table I., which shows the monthly admission and discharge rate during the two years under consideration, will indicate the necessity for a large medical staff to deal with such numbers alone. At the opening of this special psychiatric section it was strongly urged that the relative strength of medical officers should be no less than 1 to every 100 patients.

Apart from the question of dealing with large numbers it must be remembered that if patients are to have adequate treatment in the early stages of mental disorder, the relative

TABLE I


1916
1917
1918
JUNE JULY AUG. SEP. OCT. NOV. DEC. JAN. FEB. MAR. APRIL MAY. JUNE JULY AUG. SEP. OCT. NOV. DEC. JAN. FEB. MAR. APRIL MAY.
Actual admissions during the month
,, discharges ,, ,, ,,
Average admissions ,, ,, ,,
,, discharges ,, ,, ,,

number of doctors must be increased much above that which is customary in present-day asylum practice. From the experience I have had I would advocate that there should be no less than 1 medical officer for every 50 patients, if all that is possible is to be done for such cases.

In making this statement I am, of course, intending it to apply to a hospital dealing solely with early cases of mental disorder, and am not supposing that the chronic cases will be included or retained, if admitted.

To undertake work which, if carried out properly, meant spending many hours a week with individual cases, was quite out of the question with a staff of only 1 in 100, in addition to the fact that, at times, when medical officers were urgently needed elsewhere, even this proportion could not be maintained. As much as possible, however, was done.

A great deal has been written lately about the treatment of the psychoneuroses by suggestion and persuasion, using these terms to cover all the different modifications, such as hypnotism and treatment with the aid of electricity, which comes under their meaning. Also the amount of individual attention and time that has to be given to each case. The same applies to the treatment of the psychoses, and in many cases is the sole means of saving them from running a chronic course. It is true that some cases appear to recover with "quiet and rest," and treatment by what Dr. T. E. K. Stansfield[3] has called "rational" lines, but there are a great number in which every means of suggestion and persuasion must be exercised with tact and perseverance and untiring patience upon the part of the medical officer. In these cases —more so than in the psychoneuroses—comes the importance of psycho-analysis, using this term in its widest sense and not necessarily meaning Freudian psycho-analysis, as is so commonly concluded by those opposed to this method. I am certain that individual attention and analysis, as a rule, fully justified the expenditure of time necessary for such methods, the principles of which have been so aptly and ably described by Bernard Hart,[4] who teaches that it is becoming more and more certain that the mental factor forms the most important link in the chain of causation in the psychoneuroses and has drawn attention to the underlying conflict between the instinct of self-preservation and the sense of duty and patriotism in the case of the soldier.[5]

As has been pointed out by Eder,[5] "psycho-analysis is the only method that enables the patient to deal with the underlying state, and not merely with the symptom. In psycho-analysis the patient learns for himself the real significance of his disease, a privilege only acquired by a bitter self-realisation. The 'rest cure' affords the ideal conditions for retirement from life's duties, and strengthens the patient's motives for remaining ill, but by psycho-analysis the unconscious mind is explored and the energy hitherto wasted in internal conflict is made available for the purpose of life."

Usual Procedure on Admission.

On admission of patients to the Mental Section of the Lord Derby War Hospital, they were taken straight to the admission ward, where clerks obtained particulars for the admission and discharge book. Each medical officer was provided with a private room in his wards, where, at his convenience, he could interview each patient separately, with the full assurance that his statements would be treated as confidential. The case sheets of each patient in the ward were kept in this room under lock and key as confidential documents, and not hung up with the chart over the patient's bed, as in ordinary hospital wards. Everything, in fact, was done to inspire confidence between the patient and the doctor, and it is only in this way that one can expect such cases to really enter freely into examination, to coöperate with the doctor and interpret their feelings, as the result of which the benefits of psycho-therapy become very strikingly obvious. It is not to be expected that such can be carried out either in an open ward with numbers of other patients listening to everything said, or in a room in which anyone else is present except the physician and the patient. Beds in the open air were provided for those to whom it was thought rest in bed would be beneficial, and as soon as possible patients were allowed to have freedom from lock and key.

No selection as to the type of case admitted was possible. Amongst such a vast number of admissions it is not surprising therefore that the number of cases of general paralysis alone came to 197.

The above facts must be borne in mind when considering the recovery-rate, in addition to which I should add that the number of cases of congenital mental defect reached no small figure. Even in these cases, however, many showed acute symptoms superimposed on this congenital defect. A number of cases received had been previously in special neurological hospitals, and were transferred to the mental section as they had not improved. These admissions also tended to reduce the percentage of recoveries.

Cases found to have been previously under asylum care in peace-time, all epileptics, and cases of G.P.I. were certified and transferred to asylum care as soon as the diagnosis had been confirmed. Similarly all cases who had been resident nine months without showing any appreciable signs of improvement, were so transferred, and in this way the hospital was kept as free as possible from chronic cases and an atmosphere of cure was prevalent. The total transferred to asylums was 452 (or 9 per cent.).

A number of cases were transferred to other hospitals in Scotland, Wales, or Ireland so as to be nearer their relatives for visiting purposes, and a larger number of Colonials were repatriated to the Colonies for final disposal. A large proportion of these cases were well on the road to convalescence before they left, but as their final condition was not determined, they have not been included in the percentage of recoveries. Whilst under treatment, any man having a special trade was given facilities for working at this in hospital workshops during his period of convalescence prior to his discharge, and in this way prepared himself for the work he would be taking up when leaving the hospital. This helped in a large measure to establish the man's confidence. Other cases, numbering about 100 daily, were encouraged to work on the farm and in the grounds. Idleness was discouraged, but absolute rest in bed in certain cases of exhaustion psychoses, on the other hand, was insisted on for purposes of treatment.

3. *An Abundant Diet.*

Next I should like to draw attention to the question of diet. A liberal nourishing diet is of the greatest importance in treating all cases of acute mental disorder. The diet as issued to the patients in the Mental Division of Lord Derby War Hospital will be seen laid out for the week in Table II. The allowances are much more liberal than those allowed by the average civil asylum scale. The cost of this dietary alone in a civil institution would probably exceed 13*s.* per head per week on pre-war prices, whereas the average cost of maintenance up to the end of 1918, in civil asylums in this country, was only 14*s.* 5¾*d.*, and this is stated to be a rise of 1*s.* 9*d.* on the cost of the previous year.[6] It must also not be forgotten that this cost of maintenance includes provision for the salaries of the staff for these institutions. In addition to the above standard dietary, in some cases, patients were put on milk and eggs as extras, but the necessity for this did not often arise with such a substantial diet as a foundation.

TABLE II.—*Specimen Dietary for Patients on Ordinary Diet.*

—	Breakfast.	Dinner.	Tea.	Supper.
Sunday.	Tea, bread and margarine, with boiled bacon (4 oz. uncooked).	Roast beef (8 oz. uncooked), potatoes (12 oz.) and green peas (2 oz.), and milk pudding.	Tea, bread, margarine, and currant cake.	Coffee or cocoa and cheese (½ oz.).
Monday.	Tea, bread and margarine, with one egg.	Meat pies (beef, 8 oz. uncooked), potatoes (12 oz.), and haricot beans (1 oz.), with milk pudding.	Tea, bread, margarine, and jam (1½ oz.).	,,
Tuesday.	Porridge, milk, tea, bread, and margarine.	Hot boiled bacon (6 oz. uncooked), potatoes (12 oz.), sufficient cabbage, and milk pudding.	,,	,,
Wednesday.	Tea, bread, margarine, and sausage (4¾ oz.).	Steamed fish (12 oz. uncooked), potatoes and boiled suet pudding (ginger, college, or jam roll).	,,	,,
Thursday.	Tea, bread and margarine, with one egg.	Roast beef (8 oz. uncooked), potatoes, and sufficient fresh vegetables and milk pudding.	Tea, bread, margarine, with currant bun or scone.	,,
Friday.	Tea, bread and margarine, with sausage (4¾ oz.).	Hot pot (beef, 8 oz. uncooked), peas pudding (split peas, 2 oz.), with milk pudding.	Tea, bread, margarine, and jam (1½ oz.).	,,
Saturday.	Tea, bread and margarine, with one egg.	Hot boiled bacon (6 oz. uncooked), potatoes, and sufficient cabbage, with milk pudding.	,,	,,

Notes.—Daily allowances: Bread, 12 oz.; margarine, 1 oz.; sugar, 1½ oz.; milk, 9 oz., with 15 oz. for milk puddings and 10 oz. with porridge. Tea, ¼ oz. per day; coffee, ½ oz., or cocoa, ¼ oz.

4. *Facilities for Specialist Treatment.*

Another special feature which I should mention, and from which, I am certain, many patients derived much benefit, was the facility that existed for any patient being seen in consultation by a specialist for practically any bodily disorder of which he might complain. A spirit of confidence therefore existed amongst the patients that every complaint would at once receive thorough investigation. Numbers of cases on this account were sent to special departments of the hospital for examination or treatment. I would especially mention the eye department, the ear, nose, throat, X ray, electro-therapeutics, and massage. If any patient made a complaint with regard to physical symptoms, it was the invariable rule to call the medical officer in charge of the medical or surgical divisions of the hospital in consultation, and similarly with other special branches in order that the patient should receive the best possible treatment or advice. The London Hospital scheme of appointing a whole-time salaried physician of the highest standing instead of the honorary appointment, where visits are made periodically, has already been introduced in some hospitals, as it was felt that the best results could only be obtained under conditions where the doctor was on the spot. It was certainly most helpful in dealing with large numbers of acute psychoses.

A specially trained masseur was employed in the mental section to attend cases having surgical disabilities complicated by a psychosis. There were numerous cases of this kind, as would be expected, seeing that most of the admissions came direct from the firing line or front-line area. Cases in a generally debilitated exhausted state were also treated with general massage in some instances. There were 18 of these. About an hour was devoted to each case at a sitting, and treatment was given three days a week, extending in some instances to three months in duration. The improvement in general condition was very striking, and in all cases the mental condition improved with accompanying psychotherapy.

Surgical Cases.

Amongst the surgical cases special investigations were made into a hundred cases of head injury with accompanying mental symptoms, which I have made the subject of another article.

No corroborative evidence was found to substantiate Holländer's[7] statements that loss of intelligence occurs in frontal injuries, melancholia in parietal injuries, mania in temporal injuries, or that in the case of occipital injuries the gregarious instinct is especially effected. On the contrary, it was clearly shown from 27 cases of frontal injury that there was no uniformity in the mental symptoms that may follow injuries to this part of the head, and this statement is applicable to the skull generally.

A large number of cases of epilepsy occurred in gross lesions of the parietal region of the skull, and my results in this respect agree with those of Roeper.[8] The preponderance of cases of amnesia were found in frontal injuries, but, with these exceptions, no symptoms could be definitely associated with injuries to any special region of the skull.

Cases of Venereal Disease.

Amongst other cases, about which some special consideration might be made, are the cases of venereal disease. There were 305 cases suspected of being so infected, and tested by the Wassermann method. Of this number 249 gave a positive blood reaction and 172 a positive reaction in the cerebro-spinal fluid. The globulin test was positive in 123, and in 109 there was an increased cell count.

Prior to the discovery of this method of testing a patient's bodily fluids it was, in many cases, mere guess-work to say whether this or that person, at some time or other, had or had not suffered from syphilis. Any expressions of opinion

as to the rôle of syphilis in the causation of mental disease must have been merely speculative. At the present time, however, it must be accepted that, provided the Wassermann test is performed by a specially trained pathologist, who has had special experience in its technique, the percentage of positive Wassermann reactions in active syphilis is so high that the test may for all practical purposes be looked upon as decisive.

Major C. F. White and Captain A. T. McWhirter and Captain H. Barber, as a result of their experience of 5800 Wassermann tests, say that they are satisfied that syphilitic serum gives a positive result and non-syphilitic a negative in such an overwhelming majority of cases that any apparent exceptions must be very closely studied before they are accepted. A full course of 606 injections was given in 11 cases in which the blood only was positive. Nine of these cases were ultimately discharged recovered from their mental symptoms. The complete conversion of the positive Wassermann reaction in the blood was, however, only obtained in four of these cases. It must be remembered, however, that the history of infection was at a very remote period, and that, apart from the mental symptoms, there were no active signs of syphilis.

The method of treatment adopted was to give salvarsan or its equivalent combined with mercury as follows :—

	Salvarsan	Mercury.
1st day	0·3 g.	1 gr.
4th ,,	0·3 ,,	0 ,,
8th ,,	0·3 ,,	1 ,,
15th ,,	0 ,,	1 ,,
22nd ,,	0·4 ,,	1 ,,
29th ,,	0·5 ,,	1 ,,
36th ,,	0 ,,	1 ,,
43rd ,,	0·5 ,,	1 ,,
50th ,,	0·5 ,,	1 ,,

The 606 injections were given intravenously by the gravity method, and the mercury injections were given intramuscularly into the buttocks. On the 52nd day the blood was again tested, and, if negative, treatment was suspended. In cases where the reaction was still positive, however, a course of pot. iod. was given till the 68th day and then the following injections :—

	Salvarsan.	Mercury.
69th day	0·3 g.	1 gr.
76th ,,	0·4 ,,	1 ,,
83rd ,,	0·5 ,,	1 ,,

If the blood was still positive after this, chronic mercurial treatment was advised. The derivatives of salvarsan used were kharsivan and arsenobillion, and the solutions were freshly prepared immediately before injection. In no case was there any dermatitis or other untoward symptoms.

The treatment of syphilis of the nervous system by prolonged intravenous injection of neosalvarsan has been shown by Henry Head [10] to have given good results in cases where the lesion is situated in parts, such as the meninges and vessels (meningo-vascular type), easily reached by a drug circulating in the blood. He states that not only is the disease affected favourably, but the Wassermann reaction, if positive in the c.s.f., may become negative within a few months after treatment, and the pleocytosis greatly reduced. In most cases this change was effected by three doses of 0·9 g. of neosalvarsan, but in a few instances even relatively smaller doses of salvarsan were used. On the other hand, in cases which do not improve with this treatment, he considers the affection is deeper-seated and out of reach of the arsenical compounds employed by that method. The conclusions arrived at by Head were that it is impossible by bedside examination to determine whether the patient is suffering from dementia paralytica or syphilitic encephalitis. Cases of syphilis meningo-vascularis cerebralis may be distinguishable from dementia paralytica solely by the fact that the cerebro-spinal fluid from the first gives a negative reaction. But if, as so commonly happens, intraspinal complication is present the cerebro-spinal fluid in both may be equally positive.

General Paralysis.

With regard to the cases of general paralysis, there were in all 197 cases admitted under my care. Ten of these died before their transfer to asylum care could be carried out. Transfer to an asylum was the method of disposal of all these cases as soon as the diagnosis had been confirmed by the laboratory findings. In 180 cases in which records of the reactions were made 168, or 94 per cent., gave a positive blood Wassermann reaction and 12 a negative. Amongst the latter, however, the negative blood reaction was associated in four cases with a positive reaction in the c.s.f., a positive globulin reaction and an increased cell count, leading to the supposition that the bloods had been converted by treatment, and in only two cases were all the results negative. The c.s.f. reaction was positive in 93 per cent., the globulin reaction in 94 per cent., and there was a pleocytosis in 87 per cent. The cell count in some cases reached as high as 400 per c.mm., but anything over 10 per c.mm. was looked upon as abnormal.

Captain Barker Charnock, R.A.M.C., pathologist to the hospital, has very kindly given me the following brief observations: "In general paralysis of the insane it is my experience that, as a routine, the blood serum and the cerebro-spinal fluid should be examined, together with the globulin content and the cell estimation of the latter. As an aid to the differential diagnosis of general paralysis, cerebral syphilis, and tabes, Lange's colloidal gold reaction is of great use; the only difficulty being the preparation of the water triply distilled from glass. A good glass still is required in the up-to-date laboratory. In spite of what is said to the contrary, I have found that the routine globulin reaction has been useful in early cases. It has been my experience that the globulin reaction may appear before the positive Wassermann reaction in the cerebro-spinal fluid. As a reliable test the Pandy method gives good results and is free from the obnoxious odour associated with the Noguchi reactions. The Alzheimer method has been of great use in demonstrating the plasma cells diagnostic of G.P.I. The quantitative method of performing the Wassermann test has been useful in judging the effects of treatment. This method has been controlled by the modified complement-fixation tests with and without the destruction of complement. Observations based upon the modified tests pointed out that the sera possessing the most potent complement usually reacted best to arsenical treatment."

These reactions are of the greatest importance in dealing with incipient cases of general paralysis of the insane, the correct diagnosis of which in this stage cannot be given unhesitatingly without their aid. In quite a number of cases the reactions to these tests changed from a negative to a positive finding whilst the patients were under observation, showing the early stage in which the condition existed. On the other hand, in cases in which the medical history sheet (A.F. 187) covered that period, the date of primary infection could be shown to be as long as 15 years before the onset of the symptoms.

A few of the early cases of general paralysis of the insane were give intrathecal injections of mercurialised serum, but in no case was a positive converted into a negative fluid reaction by this treatment, and hence no success can be claimed for it as far as my experience goes. All types of general paralysis of the insane were met with, and the impression gained was that the symptoms developed more rapidly than in the cases seen in pre-war days. A few died in a state of acute mania, with little to justify the diagnosis had not the reactions of the blood and fluid been tested, and I feel sure that many cases in the past who have died from so-called "acute delirious mania" belong to this category.

Lumbar Puncture.

The importance of performing a lumbar puncture and testing the spinal fluid reactions, especially in cases which in any way cause one to suspect incipient symptoms of general paralysis, cannot be over-emphasised. Up to the present cases are rarely diagnosed before the brain has undergone extensive and irreparable damage. Sir Charles Ballance and Dr. H. Campbell [11] have recently published an instructive article on this subject advocating treatment by introduction of salvarsanised serum into the lateral ventricles in the pre-clinical stage of the disease. They point out also that the demobilisation of the British Army and the probable increase of syphilis in this country make it highly desirable that any means which may have a remedial influence on syphilitic infections of the nervous system should receive careful study.

This all tends to emphasise the importance of any institution dealing with early cases of mental disorder being in close association with an up-to-date laboratory and

pathologist especially experienced in the technique necessary to perform this work. It also shows the importance of any institution for the early treatment of mental diseases being provided with adequate means for treating syphilitic affections by modern methods, and the need for closer cöoperation between clinician and pathologist than has been customary in the past.

TABLE III.—*Showing Total Admissions of Cases from the French Expeditionary Force Classified according to their Mental Diseases, and their Disposal. (a) June, 1916–17; (b) June, 1917–18.*

Form of mental disease.	Totals. First year.	Totals. Second year.	Discharged home. a	Discharged home. b	Sent to asylums. a	Sent to asylums. b	To other hospitals. a	To other hospitals. b	Home duty. a	Home duty. b	Died. a	Died. b	Still in hospital. a	Still in hospital. b	Progressive totals.
N.A.D. mental ...	20	16	—	1	—	—	14	11	4	4	—	—	2	—	36
Neurasthenia	145	64	71	51	4	—	11	8	27	3	—	—	32	2	209
Psychasthenia ...	—	13	—	7	—	—	—	1	—	—	—	—	—	5	13
Concussion of the brain	1	—	1	—	—	—	—	—	—	—	—	—	—	—	1
Tumour of the brain	1	—	—	—	—	—	—	—	—	—	1	—	—	—	1
Epilepsy	20	5	14	5	—	—	—	—	4	—	—	—	2	—	25
Hysteria and Shell shock	4 63	6 12	3 25	5 8	— —	— —	— 6	1 4	1 20	— —	— 1	— —	— 11	— —	10 75
Locomotor ataxia ...	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1
Mental deficiency*	233	190	89	104	2	15	14	42	14	4	—	1	114	24	423
Mania...	135	81	37	55	3	5	12	9	16	7	5	4	62	1	216
Melancholia	309	143	114	84	4	16	18	24	31	5	—	3	142	11	452
Mental stupor... ...	33	16	3	9	2	—	7	6	1	—	—	—	20	1	49
Delusional insanity	242	102	73	39	5	25	20	26	17	2	—	1	127	9	344
Epileptic insanity...	11	7	6	5	—	2	1	—	—	—	—	—	4	—	18
Moral insanity ...	3	10	2	6	—	1	—	2	—	—	—	—	1	1	13
Impulsive insanity	3	1	—	—	—	—	1	1	2	—	—	—	—	—	4
Acute delirium ...	14	5	6	2	—	—	—	—	1	1	—	2	7	—	19
Insanity†	—	2	—	1	—	—	—	—	—	—	—	1	—	—	2
Confusional insanity	179	182	60	121	—	5	18	30	29	9	1	2	71	15	361
Alcoholic insanity	19	10	5	6	1	1	4	2	2	—	—	—	7	2	29
Cerebral syphilis ...	3	2	1	2	—	—	—	—	—	—	2	—	—	—	5
G.P.I.	78	50	4	3	48	35	2	3	—	—	1	4	23	5	128
Mental instability	39	21	21	14	2	2	3	2	4	1	—	—	9	2	60
Dementia præcox...	127	97	26	27	6	36	13	22	9	1	—	1	73	10	224
Secondary dementia	20	8	9	5	—	3	2	—	—	—	—	—	9	—	28
N.Y.D.	1	—	—	—	—	—	—	—	—	—	—	—	1	—	1
Morphinism	—	1	—	1	—	—	—	—	—	—	—	—	—	—	1
Totals	1704	1044	570	560	77	146	146	194	183	37	11	19	717	88	2748

* Including feeble-mindedness, idiocy, and imbecility.
† Associated with acute infective disease.

Correction of Refractive Errors.

A large number of cases complaining of persistent headache were sent to the ophthalmic department of the hospital for special examination, and on the refractive errors being corrected rapid improvement resulted in the accompanying mental symptoms.

Captain R. Richards, R.A.M.C., ophthalmic surgeon to the hospital, has very kindly given me the following particulars with regard to 129 cases examined. Of these cases, he states that "myopia accounted for 7; hypermetropia, 15; simple astigmatism, 11, myopic astigmatism, 14; hypermetropic astigmatism, 15; mixed astigmatism, 26; anisometropia, 41. In addition to the above 9 cases of presbyopia were corrected. The 41 cases specified under anisometropia were of a more or less pronounced character, but there were others which showed a much lesser degree of unequal refraction. Examination of the fundi revealed in many of the eyes conditions associated with pathological and traumatic factors, such as choroiditis, retino-choroiditis, choroidal atrophy, opaque nerve fibres, macular changes due to high myopia, ruptured choroid, and myopic crescents. There were also cases of nystagmus, corneal nebulæ, corneal scars following perforating wounds, occlusion of pupil, &c. The cases proved quite an interesting series, and it is satisfactory to find that the improvement in the visual acuity of those corrected added to their well-being and corresponding improvement in their mental condition. Ophthalmoscopic examination under the best conditions is not an easy matter, and one would be quite justified in coming to the conclusion that it would be much more difficult in patients mentally afflicted. This conclusion was, however, completely falsified; for, with only a very few exceptions, the very best of coöperation and assistance was obtained."

In the cases with refractive error I have little doubt that an error of refraction which had previously caused no trouble had given rise to severe headache, and superimposed mental symptoms in a man whose nervous system was exhausted as the result of active service.

Conclusions.

I should like to lay stress again on the benefit derived by the system of parole which was granted to convalescing cases. Although in the period of the two years on the average 300 cases daily were getting parole, only one case of concealed delusions managed to escape detection by the system adopted. I am quite certain that could such facilities be granted to convalescing patients in civil asylums and mental hospitals throughout the country a much healthier atmosphere would be created in these institutions. The granting of permission to these patients to go out for walks, not under supervision, for a couple of hours in the afternoon, would, I am certain, promote mental "well-being" and hasten convalescence. It would be looked upon as a privilege and would be seldom abused if sufficient care was exercised as to whom it was extended.

The experience I have gained by dealing with such a vast material of early mental cases has convinced me more than ever of the importance of early treatment. The fear of being certified and sent to an asylum existed as a prominent feature in many cases, and I cannot help feeling that a step in the right direction will be made if the lunacy laws are so amended as to allow of the treatment of early cases occurring amongst civilians on similar lines prior to certification. If this were possible, and such institutions were under the control of specially experienced medical men, I feel sure that a large number of cases of early mental disease would be provided with a much needed opportunity of obtaining advice and treatment at a time when there were some prospects of it being of some value. It was remarkable to see how cases cleared up with individual attention.

As things exist at present, however, a patient suffering from early mental trouble is denied treatment by a doctor who has specialised in that branch of medicine, for it rests with the private practitioner, with no special knowledge of the subject, to certify the patient. This, in the early stages, he naturally never does, owing to the stigma attached to such a procedure. The result is that such cases drift on from bad to worse for months or even years, and are prevented from being able to obtain the advice of those interested in their condition until the certificate stage is reached. In the case of the majority the damage has been done by this time. There was a similar state of affairs with consumptive disease in the old days, before the local authorities were given the power to appoint specially trained men to treat this condition in its early stages. I strongly maintain that the need is just as great now for the "mental clinic," especially as we are face to face with a tremendous reduction of the male population of the country through the ravages of war and also an emotional epidemic, which is quite common after a period of stress and strain such as the world has recently been through. Are all these cases, which might be directly or indirectly attributed to the war, to be deprived of treatment until they are so advanced as to be recognised as certifiable by the general practitioner?

No progress can be made in psychiatry in this country till Receiving Hospitals for psychoses in the early stages are introduced as a preliminary step to certification. It will be in these hospitals that the curable cases should be treated. The chronic cases should be sent to asylums, which have already become vast store-houses of chronic mental conditions. An atmosphere of cure, which is all-important in the early stages of treatment, is not possible in such an institution where the powerful force of imitation and suggestion by contact with chronic cases can only have harmful influence. To detach such a department from the soil in which it has grown for generations, and to effect a considerable change

in procedure which has hitherto been in vogue for so many years in order to bring this about, is going to be no easy matter. But if it is agreed that the task is worth undertaking, these difficulties must be overcome, and now, when the Ministry of Health Act is in its infancy, the time seems favourable for considering these changes seriously. For acute cases every modern method of psycho-therapeutic treatment should be available in order to hasten the return of the patient's mental condition to the normal. We want the best surroundings we can get with free access to consultative advice in all the other special branches of medicine, for it is only after a searching clinical, as well as psychological, examination that the particular lines of treatment for individual cases can be determined. For the chronic cases, on the other hand, nothing more can be done than to place them in as comfortable conditions as circumstances will permit. For the latter, there already exists a plentiful supply of asylums, which in this country rank amongst the best in the world for care and comfort, but for the former there is at present almost nothing at all.

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"TWILIGHT SLEEP" IN GENERAL PRACTICE.

BY G. HAMILTON WINCH, M.B., CH.B. EDIN.

HAVING administered scopolamine-morphine anæsthesia to a series of 435 cases of parturition in private practice, I now record my results and experience of this treatment from a general practitioner's point of view. These cases were attended by me during a period of five years and nine months. During the first two years I was in a country practice in the Midlands, and during the remainder of the time I was in a London practice.

The method employed of producing anæsthesia was that developed by Gauss of Freiburg, which has become the standard, and to which he applied the term of "Dämmerschlaf" (twilight sleep). The object of this method is to obtain not only a condition of analgesia, but also one of amnesia, or loss of memory for recent events. The importance of amnesia is, that it saves the mothers from physical and mental suffering and from fear of a succeeding labour. This state of amnesia does not cause loss of memory for previous events, but only an inability to remember what is happening while the patient is under the influence of this anæsthesia.

Technique.

It is, of course, necessary to know the general condition of the patient, her pelvic measurements, and the position and presentation of the child. The only absolute contra-indication to this form of anæsthesia is primary uterine inertia. Contracted pelvis, dry labours, rigid cervix, eclampsia, and heart disease are not contra-indications. On the contrary, in some of my complicated cases, where operative treatment demanded chloroform, I very definitely found that much less was needed than in cases where "twilight sleep" was not used. Junker's apparatus has always been used by me in midwifery cases, and careful notes of the amount of chloroform used were taken. The amount used in "twilight" cases was, on an average, half the amount used in non-twilight cases.

As soon as labour begins the patient is put in the room chosen for her labour. When labour pains have caused dilatation of the cervix to the extent of admitting two fingers, and recur every five minutes in primiparæ, and not less than every seven in multiparæ, the treatment is commenced. First, the room is darkened, and the patient's ears are plugged with cotton-wool in order to help in the exclusion of any disturbing sounds. The first hypodermic injection is then administered, consisting of morph. hydrochlor. gr. ¼ and scopolamine hydrobromide gr. 1/150. Here one may mention that it is important to use freshly prepared solutions of these drugs, which should be absolutely pure. I used tablets made by the following firms: Messrs. Evans, Sons, Lescher, and Webb, Messrs. Burroughs and Wellcome, and Messrs. Parke, Davis and Co., and always found them reliable. After this injection has been given, as a rule, in 20 minutes time the patient becomes drowsy and sleeps between the pains. During the pains she may still complain, but less so than before. At this stage it is advisable to carefully watch the patient's condition and frequently auscultate the fœtal heart sounds. All being well, the second injection is given about one hour after the first; this and all succeeding ones consist of scopolamine hydrobromide gr. 1/450 only. In this series of cases I found that these subsequent injections were required every one or two hours, the interval becoming longer as the number of injections increased.

The Memory Test.

The method of determining the depth of the anæsthesia and the need of a further injection was the application of the memory test. This was carried out as follows: One wishes to find out the stage at which the patient's memory for present events is absent, but on the verge of returning. The patient's temperature was taken in the axilla, and a few minutes later a pretence of taking it in the same way was made. If on inquiry immediately after the pretended act she did not remember the previous real act, she was deemed to be sufficiently "under." The least sign of returning memory indicates another injection. The number of these subsequent injections is of no importance. I have given 14 in one case without any harmful effect.

Important Points Noted During the Anæsthesia.

In the great majority of cases the patient's face was decidedly flushed, and dryness of the throat was common. The latter condition was treated by administering frequent sips of water. In practically all the cases the patients never expressed any desire to pass urine. This was due, I think, to the fact that the amount of analgesia present nullified any pain caused by bladder distension. It is necessary, therefore, to note the condition of the patient's bladder and use a catheter when required.

The first stage of labour in these cases was nearly always definitely shortened as compared with non-twilight cases, especially in primiparæ. My experience is that this form of anæsthesia promotes dilatation of the cervix. On the other hand, the second stage of labour was nearly always prolonged; most of the delay occurring after the head had reached the perineum. This delay was not found to be in any way harmful to mother or child, even if of five or six hours' duration. In fact, owing to the gradual dilatation of the vaginal outlet, lacerations of the perineum were distinctly fewer than in non-twilight cases. In many of the cases I terminated the labour either by the use of the forceps or by the intramuscular injection of pituitary extract. The former operation was in most of my cases carried out without the use of chloroform, and was done slowly and carefully. With regard to those cases, terminated by injection of pituitary extract,—I always used pituitrin (P., D. and Co.), ½ c.cm. in an ampoule—injecting a ½ c.cm. at first, and repeating it if necessary. It was distinctly observed that pituitary extract had not the same powerful effect in causing uterine contractions in these cases that it has in non-twilight cases. No bad effects on the fœtal heart sounds were noted—that is to say, in none of my cases did the fœtal heart-rate become unduly rapid (above 170) or unduly slow (below 100). Some of the patients exhibited a certain amount of restlessness and slight delirium, but not of sufficient account to interrupt the administration.

Birth of the Child.

As soon as the child was born and the cord had been tied and separated it was removed to another room in order that its crying should not disturb the mother. This was always done when the child was born not cyanosed nor apnœic, but breathed and cried out spontaneously; in this series of cases such were in the majority. A comparatively small number—11·9 per cent.—were born cyanosed, and some were treated by artificial respiration; they all recovered. I found in a few of the cases where the baby was born

cyanosed that if simply left alone it returned to a normal condition after a considerable time.

Third Stage of Labour.

The mother was always carefully watched for atonic post-partum hæmorrhage, but this condition only occurred in 3·03 per cent. Two were cases of partially adherent placenta, where manual extraction was necessary. One other case occurred in a transverse presentation, where the version necessitated a good deal of manipulation and also the administration of chloroform in addition to the "twilight sleep." In all three the bleeding was controlled and good recoveries ensued. These cases were all multiparæ, the average number of injections per case being three. Perineal tears were remarkably few, the percentage being: primiparæ, 12·61 per cent.; multiparæ, 4·03 per cent. When they did occur they were immediately sutured without the use of chloroform.

Puerperium.

In the majority of the cases of this series the mother slept well for from two to six hours immediately after the completion of labour. The absence of shock was a most noteworthy feature in these cases. I was particularly struck by the excellent general condition of the mothers 24 hours after delivery. Lactation and involution proceeded quite as normally as in non-twilight cases, and apparently were in no way affected by the drugs administered; no other bad effects of this form of anæsthesia on the mothers were observed.

Conclusions.

"Twilight sleep" is of great value in obstetric practice, provided that it is administered in strict accordance with the technique laid down by Gauss of Freiburg. It certainly saves the mother from much pain, fright, and from shock. There are no ill-effects to mother or child.

Having been able to follow up the after-history of my cases, both as regards mother and child for a period of four years, I can confidently assert that I have not seen any harmful effects on either the mother's or the child's health which could be attributed to the use of this "twilight sleep" method.

The main disadvantage of the method in private practice is that it requires far more time and careful personal attention than are needed in ordinary labour cases. It has always seemed to me, however, that the extra time and trouble are well spent, for surely any woman has the right to be protected from unnecessary pain and suffering during parturition. I am not in agreement with those who state that labour is a normal physiological process and should be left to Nature as much as possible. Modern civilisation has so changed the average woman of to-day that parturition is no longer the easy process it was reputed to be in less civilised times. I am quite convinced that "twilight sleep" can be just as efficiently carried out in the patient's own home as in a hospital or nursing home. The following case, as being unique in many respects, is quoted in full:—

Mrs. ——, primipara, age 43 years. Healthy. Pelvic measurements normal. Labour commenced at 9 A.M. on Sept. 29th, 1917. Examination revealed normal position of child; vertex presentation; L.O.A. At 11 A.M., when pains recurred every five minutes and cervix admitted two fingers, the first injection was given. Twenty minutes later patient was drowsy and sleeping between pains, but moaning during pains. The following injections were given after memory test: second, at 11.45; third, at 1.5 P.M. (patient at this stage—face flushed, very little thirst, and during uterine contractions quiet); fourth, at 2.35 (patient's condition as above); fifth, at 4 P.M.; sixth, at 5.45; seventh, at 7.15; eighth, at 8 P.M.; ninth and last, at 10 P.M. Baby girl born at 10.30 P.M. Placenta 11 P.M. No forceps or pituitrin used. No post-partum hæmorrhage. No perineal laceration. Baby breathed and cried out spontaneously. Mother slept for six hours after completion of labour.

The chief interest of this case was the fact that during the latter part of the labour—i.e., from about 7.30 P.M. onwards—one of the worst enemy air-raids over this district of London was taking place, and some bombs were dropped within a short distance of this particular house. Careful inquiry from the patient afterwards revealed the fact that she did not know until some hours after her labour was over that an air-raid had taken place. Mother and child made splendid progress, and at the present time are both in excellent health. The baby is now 1 year and 7 months old. [A photograph of the child was submitted bearing out this statement.]

"Twilight Sleep" Statistical Table.

Total number of cases	435
Number of primiparæ	179
,, ,, multiparæ	256
Average age of primiparæ	25 years.
,, ,, multiparæ	32 ,,
Maternal mortality	Nil.
Fœtal ,,	Nil.
Vertex presentation	422
Breach ,,	8
Face ,,	2
Transverse ,,	3
Average duration of labour in primiparæ	18½ hours
,, ,, ,, multiparæ	8¾ ,,
Average number of injections in primiparæ	9
,, ,, ,, multiparæ	4
Average interval between injections	1½ hours
Highest number of injections in 1 case, 14 (in a primipara)	
Lowest ,, ,, ,, 1 (in a multipara)	
Cases in which "twilight sleep" was successfully obtained—i.e., amnesia and analgesia were complete	76 per cent.
Cases where amnesia was imperfect, but analgesia was marked	17 ,,
Cases of partial analgesia only	5 ,,
Cases of complete failure—i.e., neither amnesia nor analgesia obtained	2 ,,
Condition of child at birth—	
(1) Breathed and cried out spontaneously in	88·1 ,,
(2) Cyanosed in	11·9 ,,
Perineal lacerations in primiparæ	12·61 ,,
,, ,, multiparæ	4·03 ,,
Placenta delivered half an hour after birth of child in	66 ,,
Placenta delivered by Crede's method in	33·2 ,,
,, manually extracted in	0·8 ,,
Post-partum hæmorrhage severe in	3·03 ,,
,, ,, slight in	5·15 ,,
Labour completed by use of forceps in	18 ,,
,, ,, ,, injection of pituitary extract	22 ,,
Chloroform used as an additional anæsthesia in	7·01 ,,
Lactation—	
Mothers with good supply of milk and able to nurse	69 ,,
,, ,, ,, unable to nurse	31 ,,

HYPERKERATOSIS OF THE HAIR FOLLICLES IN SCURVY.

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IN dealing with some 3000 cases of scurvy which occurred amongst Serbian troops it was noticed that a condition of hyperkeratosis of the hair follicles was commonly present, in addition to those skin changes which are generally described as proper to this disease. The latter are: (*a*) an increase in dryness and roughness of the whole skin; and (*b*) a petechial rash due to small hæmorrhages occurring mainly in connexion with the hair follicles.

Occurrence of the Skin Changes.

Frequency.—The frequency of these follicular changes in scurvy is shown by the following analysis of 78 consecutive cases, which were under special observation with reference to another point[1]:—

Changes of petechial type only	9 per cent.
,, keratotic ,,	32 ,,
Both petechial and keratotic types present in same individual	55 ,,
No abnormal follicles	4 ,,

From this it is seen that the proportion showing follicular hyperkeratosis amounted to no less than 87 per cent.

Distribution.—The follicles which showed this change were usually limited to the lower extremities, the favourite sites being the front and inner aspects of the thighs and the upper parts of the legs. When they were numerous in these regions—and in some instances nearly every follicle was affected—those of the pubic hairs were often affected as well (20 per cent. of the cases mentioned above), and sometimes those of the backs of the wrists and forearms (2·5 per cent.).

The individual follicle.—Each affected follicle presented a hard conical swelling about the size of a pin's head, owing to a collection of horny epithelial debris which had accumulated at the follicle mouth. In some a thin atrophic hair, or a broken hair stump, projected from the summit of this cone; in others, the hair was wanting, having been shed or broken off flush with the surface. When dirt was present it tended to be incorporated with the material forming the cone, which then, on superficial examination,

resembled an ordinary sebaceous comedo. By degrees the conical projection flattened down into a scale, under which, on examination with a lens, a new developing hair could be seen coiled up like a watch spring. At this stage, also, the appearance on casual examination resembled that of a comedo. Later the flattened scale was shed, the new hair erupted and was seen to be growing from a pink recovering follicle. These changes were not simultaneous in all the follicles. When a patient was admitted to hospital it was the rule to find some follicles in the stage of conical swelling with the hair still present, some in the stage of flattened scale covering a new developing hair, and others in intervening stages of broken or shed hairs.

Duration.—The whole process took place gradually and was spread over many weeks. Owing to the fact that these changes caused no symptoms and never attracted the patient's attention their duration before admission could not be ascertained. Since, however, it was common to find some follicles in the stage of new developing hair when the patient came into hospital, it must be concluded that the abnormal process had commenced a month or even six weeks before. Under treatment recovery was gradual. As a rule, at the end of six or eight weeks, when the patients passed from observation, all the scales were shed, and young hairs could be seen growing from pink healthy follicles. It is probable that a further period of six to eight weeks elapsed before the normal condition became fully re-established, the whole process thus taking from four to six months in a marked case.

Degree of recovery.—Though it is possible that some few follicles were permanently destroyed, complete recovery must be the rule. All those which were watched in 1918 were seen to recover to the stage of commencement of a new hair, and no deficiency of leg hairs was ever noticed to follow the severe epidemic of scurvy from which the Serbians suffered in 1917.

Causation and Value in Diagnosis.

The cause of hyperkeratosis of the follicle.—The question was raised whether these keratotic changes could be due to a minute hæmorrhage having taken place into the deep part of the follicle, sufficient to impair its nutrition, but too small to be recognised as a hæmorrhage upon the surface. In the follicles of the petechial type the appearances were quite different. In these the follicle formed the centre of an intradermal hæmorrhage which showed as a flat round spot, 1 or 2 mm. in diameter, bright red in colour when recent, fading to a dull brown later. Although the hair of this follicle might be thin and atrophic or shed, there was never any heaping up of epithelium or keratosis, the spot remaining flat. Intervening types between the petechial and the keratotic were not seen, and the presence of hæmorrhage could never be demonstrated in one of the latter, so that it is safest to conclude that the keratosis was caused by a simple scorbutic impairment of the nutrition of the follicle.

Friction and irritation from dirt were taken into consideration as possible contributing causes and both dismissed. Friction seems to be ruled out by the frequency with which the pubic hairs were affected and by the fact that the infantry suffered as much as mounted troops. As regards cleanliness, the skins of these men were as well kept as those of any other troops on active service.

Value in diagnosis.—When this follicular hyperkeratosis had been recognised as occurring in the vast majority of cases of undoubted scurvy it was searched for in patients admitted for other diseases and at other seasons, as a result of which it was found that: 1. Follicular hyperkeratosis was unusual except during the scurvy season (January to June). When seen at other times it was usually in conditions involving marked wasting and debility, such as chronic dysentery, in which a deficiency of antiscorbutic vitamine might well have existed. 2. During the scurvy season, when the Serbian Army as a whole was suffering from deficiency of antiscorbutic vitamine, follicular hyperkeratosis was found to be present in a large proportion of patients admitted for other diseases. This was most striking in the case of men admitted to the surgical side for conditions which had not impaired the general health, such as gunshot wounds, herniæ, fractures, &c. Although these men might have no other signs or symptoms of the disease, we came to regard them as definitely scorbutic, and my surgical colleague, Major R. V. Slattery, postponed operating upon them, whenever possible, until they had received some weeks of antiscorbutic treatment.

In consideration of these two points, and of the fact that most definite cases of scurvy, though admitted within a few days of the onset of symptoms, show a stage of keratosis which must have taken some weeks to develop, it seems obvious that the presence of this follicular hyperkeratosis may afford a valuable means of early diagnosis. I am under the impression that, given another scurvy epidemic among Serbian troops, it would be possible to pick out most of the men who were on the road to clinical scurvy by a brief inspection of the hair follicles of their legs, and to do this in the pre-symptomatic stage when preventive measures would still have time to succeed.

The relation of hyperkeratosis to skin nutrition in general.—Dr. A. Whitfield tells me that he recognises general dryness and roughness of the skin with follicular changes similar to those described above as occurring in all sorts of malnutritional states, but most commonly in association with wasting. He regards it as a general stagnation process which shows most in the follicles, the cells being incompletely matured and consequently cohering to make a flake which is shed en masse, instead of by individual cells as an imperceptible process.

As noted by Johnson Smith,[2] wasting—that is to say, simple loss of fat and muscle—does not occur in uncomplicated scurvy. Certainly some of my cases which showed these follicle changes in marked degree were amongst the finest specimens of physical manhood I have ever seen; and, excluding complicating factors such as dysentery and malaria, the majority were above rather than below the average of physical development. In the case of these Serbians it seemed that nothing was lacking save antiscorbutic vitamine—a fact which invites speculation concerning the pathogeny of the similar skin condition which occurs in other malnutritional states.

It is to be remembered that with our modern habits of cooking the intake of antiscorbutic vitamine of the average individual falls considerably below the ration which was intended by nature.

Conclusions.

1. Follicular hyperkeratosis occurs in the vast majority of cases of clinical scurvy.
2. In a large proportion of cases it formed the first recognisable sign of the scorbutic tendency, and would have enabled a diagnosis to be made before the onset of symptoms.
3. It is similar in appearance to the hyperkeratosis of follicles which occurs in other malnutritional states.
4. It appears to be due to altered nutrition of the follicle produced by simple deficiency of antiscorbutic vitamine.

I am indebted to Dr. Whitfield for information concerning follicular hyperkeratosis in general malnutrition, and to Miss Ahern for careful clinical notes of the cases quoted.

References.

1. Wiltshire: The Value of Germinated Beans in the Treatment of Scurvy, THE LANCET, 1918, ii., 811.
2. Johnson Smith: Article, Scurvy, Allbutt and Rolleston, System of Medicine, 2nd ed., vol. v., 886.

Welbeck-street, W.

CENTENARIANS.—Mr. W. C. Vivian died on August 29th at his residence, Reskadinnick, Camborne. He celebrated the one hundredth anniversary of his birthday on June 6th last.—Miss S. E. Selden, daughter of the late Mr. W. C. Selden, M.R.C.S., of Melksham, died recently at Bath. She was born in Bath on Feb. 3rd, 1819.

GUY'S HOSPITAL WAR MEMORIAL.—The fund for the Guy's Hospital Memorial will be closed at the end of the present month and a general meeting of the subscribers will be held in October to decide upon the form or forms which the memorial shall take. The first charge on the fund will be the education of the children of Guy's men who have fallen in the war, should such help be required, as well as assistance to widows and to Guy's men permanently disabled. Fortunately the help required in this direction will not demand much of the fund, and it is proposed to devote a portion of the subscriptions to a War Memorial Clinical Ward, the adornment of the Dining Hall of the College, and the formation of a nucleus for endowment of a Dental Research Scholarship.

FOREIGN BODIES IN THE ŒSOPHAGUS AND RESPIRATORY PASSAGES.

REMARKS ON THE DANGERS ARISING FROM THEIR IMPACTION AND SOME DIFFICULTIES WHICH MAY BE MET WITH IN THEIR REMOVAL:

A PLEA FOR THE ABOLITION OF THE COIN-CATCHER, THE BLIND USE OF THE BOUGIE AND PROBANG, AND THEIR REPLACEMENT BY THE DIRECT ENDOSCOPIC METHODS OF EXTRACTION.

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IT is very well known that many obsolete methods of treatment persist in various departments of medicine and surgery at the present day and are still described in recent text-books. In the case of foreign bodies in the air- and food-passages the use of such out-of-date instruments as the coin-catcher, bougie, and probang still persists, much to the chagrin of the specialist, whose preaching of the dangers and risks of such unsurgical methods of treatment by blind working in the dark appears in many instances to have passed unheeded. Though old habits die hard, yet it appears incomprehensible how such procedures can still continue in the face of the accumulated experience and repeated warnings of the entire body of laryngologists. Since improvement in the "direct vision" method of per-oral endoscopy has placed at our disposal the more exact means of treating such cases, one would have thought that the coin-catcher at least would have been banished from our instrumentarium once and for all. The following cases, however, show that this haphazard and dangerous instrument is still being used, often with disastrous results.

THE BLIND USE OF THE COIN-CATCHER AND ITS DANGERS.

A Halfpenny accidentally Swallowed and Impacted in the Œsophagus for Six Days, Removed by the Œsophagoscope, after Repeated Attempts with a Coin-Catcher had Failed.

Though this case is only one of many others, in which coins and various foreign bodies have been successfully removed by endoscopic technique, yet it would appear to be of sufficient interest to merit publication in view of the importance of the discussion to which it gave rise when reported at a meeting of the Laryngological Section of the Royal Society of Medicine.[1]

On August 8th, 1915, at 4 P.M., a little girl, aged 4 years, was taken to a suburban general hospital, having swallowed a halfpenny at mid-day whilst playing with it in her mouth. With the exception that she had been sick three or four times there were no other symptoms. Examination showed no difficulty in breathing and as the patient appeared to be quite comfortable she was sent home. The following morning she was brought back to the hospital as she had been sick during the night, and was unable to swallow anything but liquid food. On this occasion she was admitted and X rayed by Dr. David Arthur, when the coin was distinctly seen to be impacted in the œsophagus at the level of the seventh cervical vertebra—i.e., just below the cricoid cartilage. (Fig. 1.) Three or four attempts to extract the coin with a coin-catcher (Fig. 2) without a general anæsthetic failed. It was not till six days later that it was considered advisable to send for a laryngologist, and the writer was asked to attend. The child was placed under chloroform anæsthesia, an endoscopic tube of 10 mm. diameter was passed into the œsophagus, but the coin could not at first be seen, since the tube had passed down in front of it. (Fig. 24.) On withdrawal of the tube and again passing it carefully down the posterior wall the coin was easily located and removed without any difficulty with forceps. The child returned home next day, and no complaints were afterwards made of soreness of the throat, difficulty in swallowing, or any other symptom. Fortunately, in this case no damage had been done to the œsophageal wall by the coin-catcher.

[1] Proc. Roy. Soc. Med., 1915, ix. (Laryngol. Sect.), pp. 39-41

The case gave rise to considerable discussion at the above meeting in connexion with the dangers of this old-fashioned and out-of-date instrument. Mr. D. R. Paterson referred to the case of a child who had been sent to a general hospital with a coin in its œsophagus, and because a coin-catcher "failed to bring anything away" the child was sent home. It was not until 18 months later, when "tracheal symptoms" arose, that the case came under his notice. The coin was discovered in the gullet by œsophagoscopy and was safely removed. He remarked that these cases were now common, and he thought it was time that the authorities at general hospitals recognised that the direct method was the proper one, and that such cases should not be submitted to a coin-catcher. Sir William Milligan associated himself with Mr. Paterson's remarks. He thought that hospitals should give definite instructions to house surgeons not to use the coin-catcher, and that it was lamentable the state the œsophagus was brought into sometimes by the inexperienced trials at removal of foreign bodies. He had several times seen fatal cases as the result of the wall of the œsophagus being torn by the coin-catcher. If these cases were at once sent to the proper department the right method would be used. He suggested that a resolution should be framed and forwarded to the various teaching hospitals in this country. Mr. W. Howarth related a case which occurred at his hospital, illustrating Sir William Milligan's remarks, where attempts were made to extract a halfpenny from a child's œsophagus by means of a coin-catcher. The child bit the coin-catcher, broke off the end, and this was swallowed. It became impacted in the pylorus and had to be removed by laparotomy, and the coin, which remained impacted in the œsophagus, was removed by the direct method. Since this occurrence the coin-catcher had

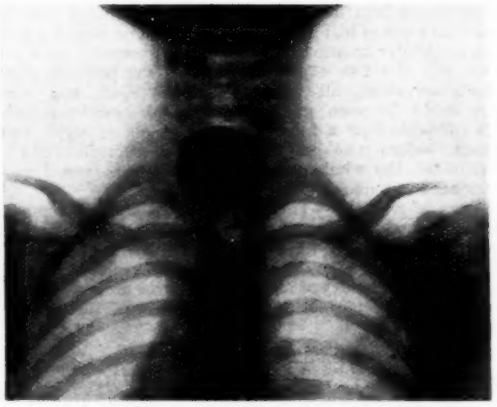


FIG. 1.—Skiagram showing a halfpenny impacted in the œsophagus of a child aged four years. Posterior view.

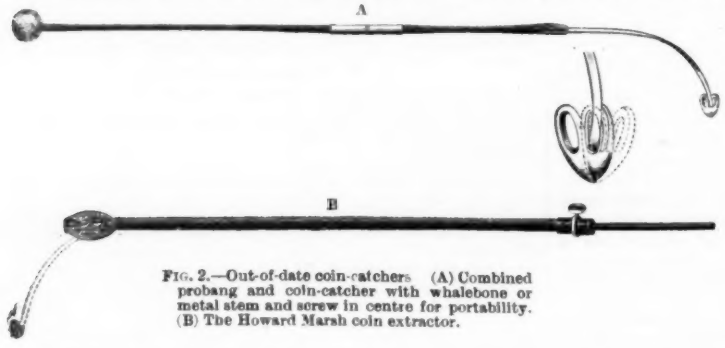


FIG. 2.—Out-of-date coin-catchers. (A) Combined probang and coin-catcher with whalebone or metal stem and screw in centre for portability. (B) The Howard Marsh coin extractor.

FIG. 3.—Semi-diagrammatic view of a coin impacted against the posterior wall of the œsophagus, leaving sufficient room in front for a coin-catcher to pass up and down without touching the coin.

FIG. 4.—The cricoidal-pharynx and upper part of œsophagus seen from behind. A portion of the posterior wall has been removed to show the coin-catcher which has caught a coin, but on withdrawal has itself been caught under the posterior inferior edge of the cricoid cartilage, so that neither the coin-catcher nor the coin can be extracted.

been banished from the casualty department at his hospital. Dr. F. de Havilland Hall expressed his opinion that it was very desirable that the members of the Section of Laryngology should draw up a communication and send it to the members of general hospital staffs — that the time had come for pronouncing that the direct method should be employed in these cases instead of using the coin-catcher.

Some Reported Cases showing the Disastrous Results following Attempts at the Blind Extraction of Foreign Bodies.

The following are a few of many cases reported in the medical press which are here referred to in order still further to emphasise the disastrous results of the blind probing in the dark with forceps, the coin-catcher, or probang:—

Chevalier Jackson[2] (Philadelphia) mentions that he had seen a child, aged 2 years, who had a penny lodged in the œsophagus five days previously and where forceps had been blindly passed without an œsophagoscope, which he considered an "utterly unjustifiable procedure." When seen "the temperature was 104° and the pulse uncountable, sloughs were being vomited, and the child was sinking away in the profound shock of a traumatic œsophagitis. Its death was really due to the absolute ignorance of the family physician, who had never heard of œsophagoscopy and its safety in trained hands."

Logan Turner[3] (Edinburgh) refers to a case where a halfpenny had remained in the œsophagus for only one week, and the patient died as a result of the injury caused by the old-established method used for the removal of the coin, and not from the presence of the coin itself.

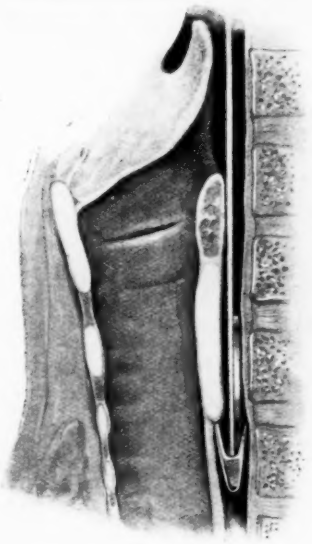


FIG. 5.—The same in sagittal section. The coin is seen lying in the posterior half of the coin-catcher, whilst the anterior portion has been caught under the lower projecting edge of the cricoid cartilage.

Thomas Guthrie[4] (Liverpool) reports a case in which a halfpenny was impacted in the œsophagus and a previous unsuccessful attempt at removal with the coin-catcher failed. On examination with the œsophagoscope the coin was found to have been forced upwards and buried under the mucous membrane at about the level of the cricoid. Removal was performed by tearing through the mucous membrane, but recovery was fortunately uneventful.

E. D. Davis[5] supplies the following notes of two cases not yet recorded:—(1) A girl, aged 4½, swallowed a halfpenny, which became impacted in the gullet immediately below and overlapped by the lower edge of the cricoid cartilage. Several unsuccessful attempts were made to remove it by experienced and skilful surgeons accustomed to the use of the coin-catcher. The coin was finally removed without difficulty by œsophagoscopy. (2) Report of an inquest in the lay press on a boy where the coin-catcher was used to extract a penny. The coin-catcher broke and the child died with the penny and piece of the coin-catcher fixed in the gullet.

Norman Patterson[6] gives the particulars of an unreported case which occurred at one of the London hospitals. A child, aged 4 years, had a

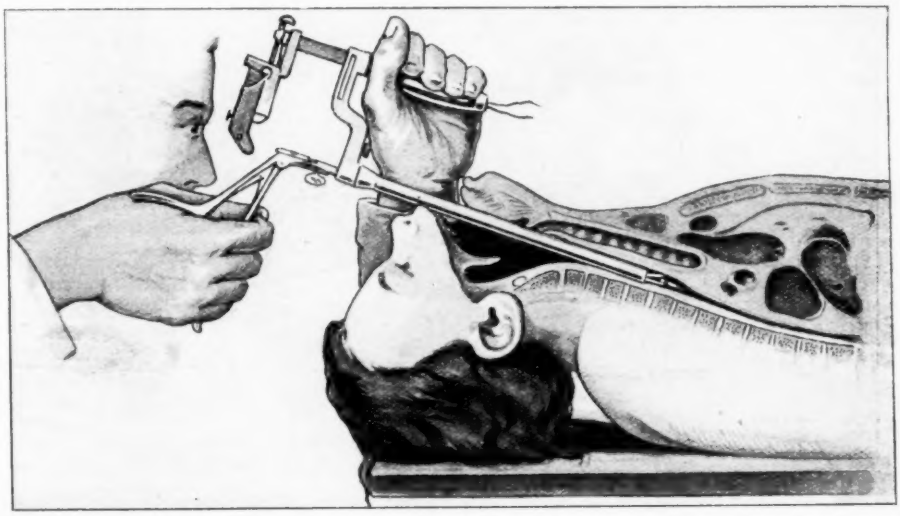


FIG. 6.—This diagram shows the disadvantageous and strained position commonly employed for the passage of endoscopic tubes through the buccal cavity, pharynx, and œsophagus, with over-extension of the head and neck, causing anterior curvature of the cervical vertebræ; it also shows the faulty position of the tube in the middle line of the mouth and in contact with the incisor teeth.

[2] Journ. Amer. Med. Assoc., 1909, liii., p. 1009.
[3] Proc. Scot. Otol. and Laryngol. Soc., Nov. 22nd, 1913; Abstract Journ. Laryngol., Rhinol., and Otol., 1914, xxix., p. 98.
[4] Liverpool Med. Chir. Journ., 1912, xxxii.; Abstract Journ. Laryngol., Rhinol., and Otol., 1913, xxviii., p. 219.
[5] [6] Personal communication to the author.

halfpenny impacted in its œsophagus at the level of the cricoid cartilage—as shown by X rays. During attempts to move it with the coin-catcher the basket portion broke off from the stem and passed into the stomach. Both coin and coin-catcher had to be removed the same evening by gastrotomy. The coin-catcher employed had been in use at this hospital for 20 years, and had become weakened by rust and old age.

G. L. Richards[7] (Fall River, Mass.), at a meeting of the American Laryngological Association in 1909, in describing the coin-catcher as almost obsolete, mentions that a child of 2 or 3 years of age was brought to one of his colleagues with a coin in the œsophagus, and he used the coin-catcher. After catching the coin and trying to remove it, he found this was impossible on account of urgent symptoms of suffocation. He had to do a tracheotomy first, and was then able, but

Donald Armour[9] refers to the case of a boy, aged 5 years, who swallowed a coin, which was seen by X rays lodged in the pyriform fossa. A house surgeon passed a coin-catcher and engaged the coin, but on traction being made to remove it the coin-catcher broke off at the junction of the metal part with the whalebone handle. The portion of the coin catcher, 5 inches in length, passed down and lodged in the lower end of the œsophagus. The coin was easily extracted through the mouth with a pair of forceps, whilst it was necessary to perform laparotomy and gastrotomy in order to remove the portion of the coin-catcher.

Gordon King[10] (New Orleans, U.S.A.) protests against the indiscriminate use of the coin-catcher, which he says may be the cause of serious injury to the œsophagus. He cites a case reported by Sebileau

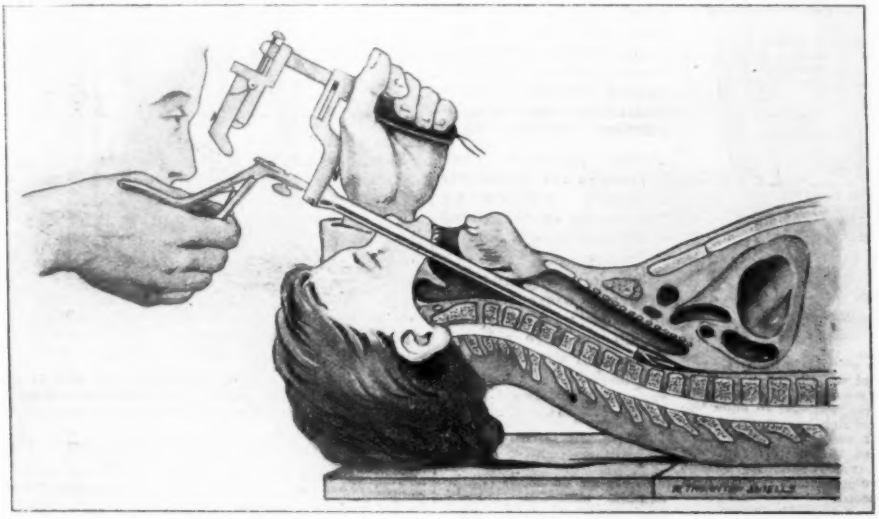


FIG. 7.—This diagram shows the correct position for the easy insertion and passage of endoscopic tube into the œsophagus when the upper two-thirds are under examination.

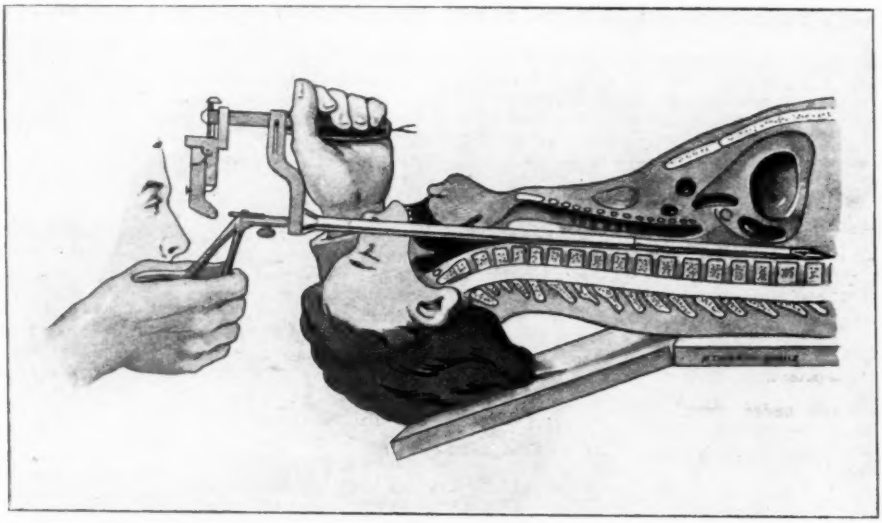


FIG. 8.—The same when the lower third of the œsophagus is under examination; the head being lowered by means of the movable table flap, the axis of the endoscopic tube is brought into line with and parallel to the œsophagus in the horizontal plane.

with difficulty, to remove the coin-catcher, since it had got caught under the cricoid cartilage (Figs. 4 and 5 have been specially drawn for the writer to illustrate how this danger can occur).

Chevalier Jackson[8] (Philadelphia), in a discussion which followed, said he was sorry to say the coin-catcher was not an obsolete instrument. A patient was brought to his hospital a few weeks previously with a penny in the œsophagus. A coin-catcher had been previously passed down to take out the penny, the position of which was demonstrated by a radiogram, but the coin-catcher entered the trachea and on being drawn out had torn out the inside of the larynx. The child was in a very serious condition. It took him but a moment to remove the penny safely and easily by aid of the œsophagoscope.

[7] Trans. Amer. Laryngol. Assoc., 1909, xxxi., p. 371.
[8] Discussion on G. R. Richards's case, ibid., p. 372.

of death occurring from tearing through the œsophageal wall in efforts to extract a coin. He also cited another case reported by Felizet, where the basket end had been broken off and lodged in the gullet with the coin.

Frequency of Lodgment of Foreign Bodies.

Statistics show that the lodgment of foreign bodies in the air and food passages is much more common than generally supposed, especially amongst children, on account of their habit of placing things in their mouth, and these foreign bodies are exceedingly likely to make their way into the

[9] Rept. Soc. Study Dis. Child., 1904, iv., p. 116.
[10] Trans. Amer. Laryngol. Assoc., 1905, xxvii., p. 203.

FIG. 9.—Approach to the lower sphincter orifice of the pharynx (closed) as seen through Hill's 18 mm. diameter œsophagoscope.

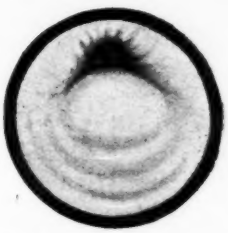


FIG. 10.—The lower pharyngeal orifice partially open. Note the alteration in the shape of Killian's lip. The pharyngo-œsophageal junction and the mouth of the œsophagus is out of sight in deep shadow. Note also the pharyngeal "lip" forming a distinct ledge posteriorly. Hill has pointed out that Killian inaccurately described this lip as forming the posterior boundary of the mouth of the œsophagus.

FIG. 11.—View of the cervical and upper thoracic œsophagus after passage of the tube through the lower sphincter orifice of the pharynx.

œsophagus. Though in some cases a coin when it has entered the œsophagus may safely pass through the alimentary tract and be evacuated without causing any symptoms, few foreign bodies, if inspired into the respiratory tract, are voluntarily expectorated. It has been shown by innumerable cases that the risk of the sojourn of a foreign body is greater than the risk of early per-endoscopic removal. Therefore when the fact of the accidental swallowing of a foreign body is recognised no time should be unnecessarily lost before it is sought for and removed, since if not removed as soon as possible it may give rise to local irritation, œdema, septic infiltration, ulceration, perforation, and death.

Pre-endoscopic Days.

A. E. Durham [11] refers to Adelman's [12] analysis of 314 untreated cases of foreign bodies in the œsophagus during the pre-endoscopic days, in 109 of which cases fatal results ensued. In 31 of the fatal cases death was due to perforation either of the heart, aorta, or one of the great vessels; in 43 to lesions of the respiratory organs; and in 25 to ulceration of the œsophagus and septic inflammation set up in the neighbouring parts.

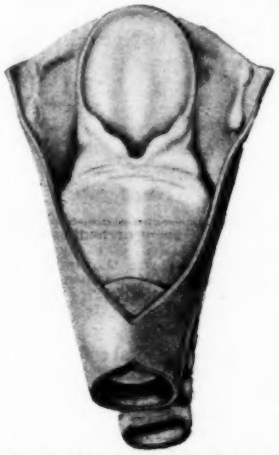


FIG. 12.—Coin impacted partly in the cricoidal-pharynx and partly in the cervical œsophagus (after Guisez).

Chevalier Jackson [13] states that 105 deaths were recorded in North America alone in five years from foreign bodies in the air and food passages, from *ill-advised efforts at removal—e.g., blind groping with forceps or bougies.* McKinney [14] adds: "There are also many more unrecognised and unreported cases which would increase the high mortality rate."

Brilliant Results of Endoscopy.

The introduction of straight endoscopic tubes has placed at our command the means by which removal of foreign bodies from the air and food passages can now be efficiently carried out by expert endoscopists under direct vision by forceps with hardly any risk to the patient; and in this way the death-rate has been greatly reduced so that many valuable lives have been saved.

Chevalier Jackson [15] gives the mortality and results of bronchoscopy in the removal of foreign bodies from the air passages during recent years as ranging from 5·3 to 1·7 per cent., while that of œsophagoscopy as 3 per cent. to nil. He states that in his own clinic in 182 cases of bronchoscopy the foreign body was removed in 177 cases, whilst in 203 cases of œsophagoscopy the foreign body was removed in 193 cases, and escaped downwards in 8. There were only 4 deaths, 1 due to chronic disease of the kidneys, the other 3 the result of previous laceration due to *improper attempts at extraction.*

Friedberg [16] (Chicago), from the analysis of 50 cases of foreign bodies in the œsophagus since the introduction of endoscopic methods, shows that the age period varies from 7 months to 63 years, but that the greater number—viz., 42—occurred between the ages of 7 months and 10 years, 13 of which were between 1 and 2 years of age. Of the 50 cases of foreign bodies it is interesting to note that 29 were coins or disc-shaped bodies, and that 40 were impacted below the crico-pharyngeus and only 4 above—i.e., in the deep pharynx. Successful extraction by endoscopy occurred in 47 cases and only 2 became dislodged and passed into the stomach. The only fatal cases amongst these 50 foreign bodies was in that of an impacted coin in which considerable traumatism had previously been caused by indirect methods, resulting in death from infection following a trachea-œsophageal fistula.

FIG. 13.—The cervical œsophagus with its lumen open (during the inspiratory stage).

FIG. 14.—The same closed (during the expiratory stage) with the endoscopic tube centralised.

FIG. 15.—The same with the endoscopic tube tilted anteriorly.

FIG. 16.—The same, showing extreme closure (stellate rosette)—uncommon.

FIG. 17.—The œsophagus in the cervical or thoracic region opening in its upper and closing in its lower part during respiration. To the left is seen a loose fold of the œsophageal wall, pushed downwards by the tube.

FIG. 18.—The thoracic œsophagus seen during the inspiratory stage more widely open and its lumen more circular than in the cervical region.

That the medical profession in general have not yet fully recognised the dangers which may accrue from the swallowing of foreign bodies, nor realised the brilliant results obtained by œsophagoscopic and bronchoscopic methods, is shown by many cases of death reported in the lay press. For example,

[11] Foreign Bodies in the Œsophagus, Holmes's Surgery, 1883, 1, p. 789.
[12] Vierteljahrsch. für Prakt. Heilkunde, 1867.
[13] Journ. Amer. Med. Assoc., 1909, liii., p. 1009.
[14] Ibid.
[15] Trans. XVIIth. Internat. Cong. Med., London, 1913 (Laryngol. Sect.), p. 3.
[16] Ann. Otol., Rhinol., and Laryngol., 1917, xxvii., p. 772.

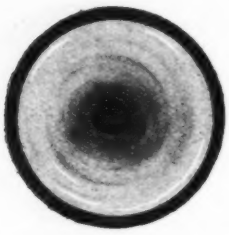


FIG. 19.—The same during the expiratory stage; incompletely closed—i.e., it does not close as completely in the thoracic as in the cervical region during endoscopy.

FIG. 20.—Mid-thoracic region showing bulging of left bronchus.

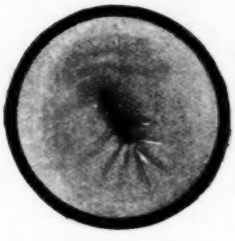


FIG. 21.—Lower end of thoracic gullet showing the phrenic or diapnragmatic constriction.

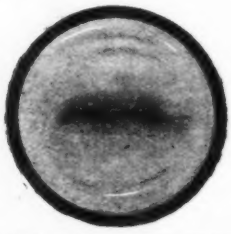


FIG. 22.—The endoscopic appearance of the inflamed œdematous lumen of the œsophagus just above the position of an impacted coin. Note the dark transverse slit.

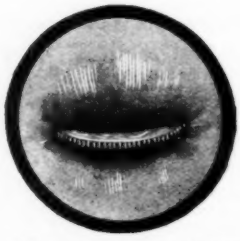


FIG. 23.—Appearance of upper edge of a coin when located by the endoscopic tube.

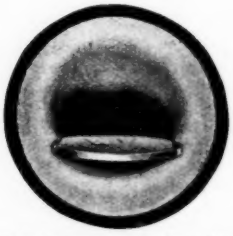


FIG. 24.—Semi-diagrammatic view of a coin lying on the posterior wall of the œsophagus, the flaccid anterior wall being stretched as the tube descends allowing endoscopic tubes to pass in front of the coin.

in the same week as the writer's case previously referred to there was reported[17] the "Death from misadventure" of a child aged 11 years, who, while playing with her father and performing a conjuring trick, accidentally swallowed a penny which stuck in its throat. Attempts on the part of the father to remove the coin having failed, the child was taken to a cottage hospital, where it died some days later of "septic poisoning." At the inquest it was stated that there was a difficulty in obtaining the services of an X ray expert to locate the coin! Though the use of the Roentgen rays may prove of great service both in settling the presence of a foreign body and in determining its exact position, yet if it is not available there is no reason why the endoscopic tube alone should not be used to locate and extract a foreign body so long as it is passed under direct vision. The X rays should only be considered as an accessory in endoscopic work and not as an absolute necessity. It is important to remember, however, that a button if made of vegetable ivory and some kinds of vulcanite may not be revealed by X rays. Again, "Death by misadventure" was the verdict[18] recently given at another of the many inquests on children who have died from swallowing foreign bodies—in the case of a two-year-old child who swallowed a halfpenny. The coin perforated an internal organ and set up inflammation of the lungs. A more correct verdict, the author suggests, would have been "Manslaughter" for neglecting to send for an experienced endoscopist.

The Danger of Foreign Bodies, with reference especially to Coins in the Œsophagus and some Difficulties which may be met with in their Extraction by Endoscopy.

Since this article is mainly concerned with the use and abuse of the coin-catcher, reference has been chiefly confined to cases of coins and allied circular bodies.

Œsophageal measurements.—The œsophagus is 10 inches long in the adult. It commences just below the lower border of the cricoid cartilage—i.e., below the lower sphincter orifice of the pharynx, its opening or mouth being in the adult about 6 inches distant from the upper incisor teeth. From the latter to the crossing of the aortic arch the distance is 10 inches, whilst to the level of the diaphragm it is 16 inches. These measurements vary somewhat in adults, and in children may be reduced to one-half.

The so-called mouth of the œsophagus is often described as a transverse slit bounded in front by the lower border of the cricoid cartilage and behind by the vertebral column, but, as emphasised by William Hill,[19] this is usually confused with the lower sphincteric orifice of the pharynx.

FIG. 25.—The same, showing commencing folding of the swollen post-œsophageal mucosa over an impacted coin. The anterior wall is seen well distended by the endoscopic tube.

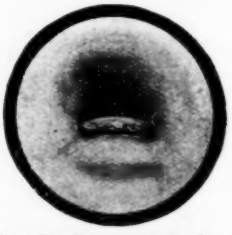


FIG. 26.—The same, showing a later stage of folding of the swollen post-œsophageal mucosa over the upper edge and sides of an impacted coin, which is securely grasped, and almost completely hidden from view.

The average measurements of this orifice in the adult cadaver are 23 mm. in the transverse and 17 mm. in the sagittal diameter. The average transverse diameter of the unstretched œsophagus in the living adult is 25 mm. (1 inch) all the way down; the antero-posterior diameter varying from 19 mm. (¾ inch) at the cricoid to 25 mm. (1 inch) at the cardia. The œsophageal lumen, however, is capable of much greater distensibility both in the infant and adult, as shown by the passage of circular foreign bodies—e.g., coins, buttons—of much larger diameter.

D. R. Paterson[20] (Cardiff) has safely removed from the œsophagus of a soldier by means of a 20 mm. tube the disc of a bully beef tin measuring 35 mm. (1⅜ inch)—i.e., rather larger than a half-a-crown, which was impacted at the level of the sternal notch, whilst Whale[21] had previously reported an exactly similar disc with the same diameter which he was obliged to remove by œsophagotomy.

Luschka[22] reported a post-mortem case where the œsophagus was dilated to 46 cm. in length (18¼ inches) and 30 cm. (12 inches) in circumference at its widest part—i.e., a diameter of 3¾ inches. This case is interesting in so far that it shows to what an enormous extent the œsophagus may become pathologically dilated.

The chief sites of impaction of foreign bodies in the œsophagus and adjacent portion of the deep pharynx.—1. In the post-cricoidal pharynx, or hypopharynx—i.e.,

[17] News of the World, August 29th, 1915.
[18] Ibid., May 19th, 1918.

[19] Journ. Laryngol., Rhinol., and Otol., 1916, xxxi., p. 164.
[20] Proc. Roy. Soc. Med., 1916, ix. (Laryngol. Sect.), p. 41.
[21] Ibid., 1915, viii. (Laryngol. Sect.), p. 70.
[22] Archiv. f. Path. Anat. (Virchow), 1868, xliii., pp. 473-477.

above the lower sphincter orifice of the pharynx. 2. At the junction of the pharynx and œsophagus, being partly in each. 3. The loose cervical portion of the gullet entirely below the sphincter. 4. At the constriction in the thoracic gullet where the left bronchus crosses it. 5. According to Stark there is a constriction where the aorta crosses it. 6. At or just above the phrenic level where there is narrowing of the gullet.

The Direct Endoscopic Method of Extraction of Foreign Bodies.

In examining the œsophagus it is advisable to employ as large a tube as possible, since not only a more extensive view of the field may be seen, but also there is more room for the manipulation of instruments, and consequently more successful results may be obtained with celerity and certainty, especially when dealing with foreign bodies. Experience has shown that much larger tubes than those first employed may be used with safety and without causing traumatism, provided the operator has acquired the necessary skill and technique.

While Chevalier Jackson employs endoscopic tubes of 7 mm. in infants and 10 mm. as the largest size in adults

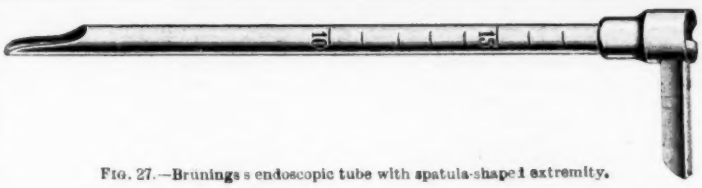


FIG. 27.—Brünings's endoscopic tube with spatula-shaped extremity.

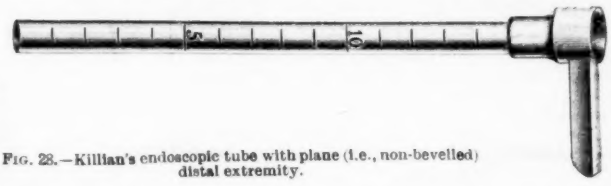


FIG. 28.—Killian's endoscopic tube with plane (i.e., non-bevelled) distal extremity.

for œsophageal work, Brünings[23] uses tubes that are larger and considers that the largest should not exceed 14 mm. though he has opened an expanding tube to 30 mm. (1 3/16 inch). D. R. Paterson[24] has shown that much larger tubes of 18 and 20 mm. diameter may be passed with safety, and are especially to be commended in the removal of large foreign bodies. His opinion has been confirmed by William Hill, who has used and advocated larger tubes up to 18 mm. diameter for some years.

When using a small or medium-sized tube its distal end has to be moved about from side to side and orientated in order to thoroughly expose the œsophageal walls and foreign bodies are likely to be overlooked, whereas the passage of a large tube circular on section, or, as recommended by Mosher, oval on section, causes distension of the walls, and as the tube is advanced any transverse folds in the walls are obliterated (Figs. 29, 30, 31), and the œsophagus may be seen standing open for some inches ahead of the tube. The tubes should never be passed except under the direct vision of the eye and no force whatever should be used. It is harder to insert a large tube past the cricoid, but the difficulty is easily overcome if the patient is placed in the proper posture, so that the buccal cavity and neck are in a straight line with the thoracic portion of the œsophagus.

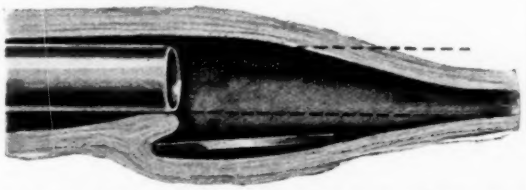


FIG. 29.—Semi-diagrammatic sectional view of the œsophagus showing how a small-sized endoscopic tube may override a loose fold of the posterior wall, which may conceal and partly cover a foreign body—e.g., a coin. The foreign body is consequently out of the line of vision.

FIG. 30.—The same, showing a large tube about to negotiate and obliterate a fold. The lower edge of the coin is here seen in the line of vision.

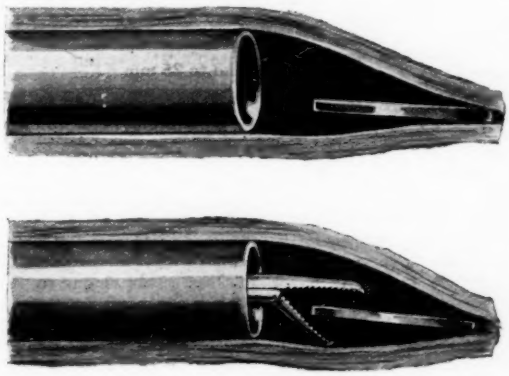


FIG. 31.—The same, showing a large-sized tube stretching the œsophageal walls, as it descends, so obliterating any folds which may be present. In this way the upper edge of a coin lying on the posterior wall becomes tilted forward towards the centre of the advancing tube and its upper edge is easily seen and seized by forceps.

Position of Patient for Œsophagoscopy.

The dorsal recumbent position with slight extension of the head at the occipito-atloid joint is the correct position for the easy insertion of the tube. (Fig. 7.) This position was first described by William Hill in 1912, who showed that the axis of the œsophagoscope more nearly approaches an angle of 45° with the horizontal when the upper two-thirds of the gullet are under examination. (Fig. 7.) He points out that in endoscopy of the lower fourth of the œsophagus the axis of the tube becomes more or less horizontal. (Fig. 8.) If the lumen of the tube is not seen several inches ahead we are not in the right axis, and the head may require raising or lowering, according as to whether the œsophagoscope is up against the anterior or posterior wall.

The patient lies in the natural recumbent position on the table—the head is extended by placing the finger in the mouth and making traction on the upper alveolar region horizontally away from the head of the table; this extends the head at the occipito-atloid joint without interfering with the position of the cervical spine which slopes gently downwards. This extension of the head without altering the curve of the cervical and upper dorsal spine serves to bring the axis of the bucco-pharyngeal cavity into line with that of the upper half or two-thirds of the œsophagus, and it is then an easy matter to pass an endoscopic tube and all obstruction is avoided (Hill),[25] whereas if the tube is passed in the middle line it will hitch against the teeth, also the arytenoid cartilages or posterior surface of the cricoid plate. (Fig. 6.) The head can be raised or lowered as necessary during the passage of the tube by means of a movable table flap. This is a much better posture than the Rose position

[23] Direct Laryngoscopy, Bronchoscopy, and Œsophagoscopy, 1912, p. 237.

[24] Proc. Roy. Soc. Med., 1916, ix. (Laryngol. Sect.), p. 41.

[25] Journ Laryngol., Rhinol., and Otol., 1916, xxxi., p. 107

or the modified Rose position of Boyce and Jackson, where the posterior part of the vertex and occiput is hanging over the end of the table and occupies a lower plane than the trunk—causing anterior curvature of the cervical vertebra and over-prominence of the sixth cervical vertebra—so obstructing the passage of the tubes. To get over the difficulties of this position some operators employ an assistant to raise or lower the head while it is extended—at the occipito-atlantal joint—this not only brings the air passages into line, but also the cervical vertebræ parallel to the œsophagus in the horizontal plane. This latter is termed the Boyce position, and is used by Chevalier Jackson.

Introduction and Passage of the Œsophagoscope.

The tube should be inserted through the right angle of the mouth, advancing by the right side of the tongue through the buccal cavity and pharynx to the right pyriform fossa, then through the hypo-pharynx or post-cricoidal pharynx to its lower sphincteric orifice. This orifice, as previously stated, has been wrongly referred to in the past as the mouth of the œsophagus, and is often described as a transverse slit, bounded in front by the lower border of the cricoid cartilage and behind by the vertebral column, but, as so frequently emphasised by William Hill, this is really the lower sphincter orifice of the pharynx, and the mouth of the œsophagus is situated immediately below.

Coins or similar circular bodies, such as large buttons or discs, when accidently swallowed, are not always easy to find. They generally enter the œsophagus flat, being so directed by the transverse shape of the lower sphincter orifice of the pharynx (Fig. 9), and almost invariably retain their original position as they descend—i.e., lie flat against the vertebral column, so that when they become impacted they are found lying against the posterior wall (Figs. 23 and 24) or in a band or recess of the œsophagus—anywhere from the cricoid to the cardia (Figs. 25 and 26),

FIG. 32.—Shows a halfpenny encysted in the post-œsophageal wall of a child aged 1 year and 10 months. The dotted circle represents the position of the buried coin. In the specimen the trachea and anterior wall of the œsophagus have been slit open from the front exposing the coin lying in its bed. The dotted line represents the buried circumference of the coin. Note the irregular folds of the œsophageal wall surrounding and nearly completely hiding the coin, only 1/5 of the centre being seen. The remarkable distensibility of the œsophagus at this age is also well seen. (Mr. Jewell's case, from a life-sized drawing specially made for the author, from the specimen, by kind permission of Mr. Jewell.)

and forceps must open antero-posteriorly in order to grasp them. The exact opposite occurs when they are aspirated into the trachea, the antero-posterior position of the vocal cords causing them to enter the trachea edge on—i.e., antero-posteriorly—in which position they are generally found.

The appearance of the œsophagus, as seen through the œsophagoscope, not only varies somewhat in different

FIG. 33.—Shows portion of halfpenny which has perforated the post-œsophageal wall into the posterior mediastinum. This illustration is from a photograph showing posterior view of Fig. 32. (Mr. Jewell's case.)

individuals, but also according as to whether a large or small tube is used in the examination. It also varies according to the position of the tube—i.e., of its distal end—for at one time the lumen may appear centralised (Fig. 14), whilst at others it may be seen in the anterior part of the field with a considerable area of the posterior wall showing posteriorly (Fig. 15), or vice versa. That is to say, in examination of the œsophagus we necessarily obtain a composite view. When an endoscopic tube is passed down into the hypo-pharnyx or cricoidal pharynx, the lower sphincter orifice is seen to be closed and is represented by a slit consisting of an anterior and posterior lip, the latter being more prominent. (Fig. 9) A short delay may occur here on account of spasm. There is a depression behind on the upper surface of the posterior lip (of Killian) against which the posterior edge of the tube may rest and pressure on which may increase the sphincteric spasm and cause the advancing tube to be held up. By gentle pressure downwards and anteriorly the spasm becomes relaxed and the sphincter opens (Fig. 10), allowing the examining tube to enter the cervical œsophagus. This entrance is the narrowest part of the œsophagus in the living subject.

Figs. 9, 10, 11 represent composite extended endoscopic views of the lower pharynx and œsophagus, drawn from life, by orientation of the distal end of the largest calibre œsophagoscopic tube (18 mm. diameter).

A coin impacted below the sphincteric orifice may have its upper edge hidden by the projecting forward of the posterior pharyngeal wall—i.e., by Killian's lip. This is due to the spasmodic contraction of the lower sphincter of the pharynx—i.e., the lower horizontal bundle of fibres of the inferior constrictor muscle (crico-pharyngeus), which, as before stated, is situated just above the œsophageal mouth. As the endoscopic tube enters the sphincteric orifice it tends to ride down over this lip and may easily pass in front of a foreign body which remains out of the line of vision. Chevalier Jackson in his latest work "Per-oral Endoscopy," 1915, shows an œsophagoscopic view of a coin wedged in this

position, with forceps retracting the subjacent cricopharyngeal fold, preparatory to removal of the coin. (Plate, iii., No. 10, p. 708.)

After passing through the pharyngeal sphincter the tube enters the cervical œsophagus, the lumen of which in the normal condition may be seen to contract and expand more or less with the respiratory movements—i.e., opening during inspiration (Fig. 13) and closing during expiration (Fig. 14), the latter having the appearance of a small dark rosette which, according to the position of the tube, may be either centrally or peripherally situated. (Figs. 14 and 15.)

Below the top of the sternum as far as the cardiac orifice of the stomach, the expansion and contraction of the thoracic œsophagus is usually found to be more marked than in the cervical region. In consequence of opening wider during inspiration (Fig. 18) it may be possible to see ahead for some distance; especially is this the case when a large tube is employed, for the movements of the œsophagus are less active because of stretching of its walls, and the œsophagus stands open for a distance of an inch or two beyond the end of the tube before it narrows down to the customary expiratory contracture (central rosette).

In the thoracic region the closure of the œsophagus is not, as a rule, so complete as it is usually in the cervical region (Figs. 14 and 19), when tubes of moderate calibre are employed.

These œsophagoscopic views have been carefully drawn from life, during the examination of a large number of cases and with various sized endoscopic tubes. I am much indebted to my friend, Dr. William Hill, for material and for assistance in my endeavours to attain pictorial correctness.

When a coin has passed the pharyngo-sphincteric constriction there is a tendency for it to be caught and impacted in the loose and collapsed walls of the cervical œsophagus before it reaches the second constriction caused by the crossing of the left bronchus.

James E. Logan[26] (Kansas, U.S.A.) states that foreign bodies usually lodge at the second constriction of the œsophagus, and there is no doubt that this is the commonest situation in children.

Scanes Spicer[27] says "it is remarkable that foreign bodies such as coins should pass the lower sphincter orifice of the pharynx and yet get lodged in a wider part of the gullet just below. It was, no doubt, the prominence of the first dorsal vertebra behind the manubrial notch in front, and the first ribs externally, which, forming the superior orifice of the thorax, provided a sufficiently narrow channel at the best of times when packed with the trachea, gullet, thyroid gland, great vessels, nerves, and lymphatic glands."

If a coin becomes so impacted, and this applies equally to the thoracic œsophagus, on approaching it with the endoscopic tube the normal opening and closing of the lumen is seen to have disappeared, and its place taken by a dark horizontal slit (Fig. 22) somewhat similar to that seen at the pharyngo-sphincter constriction. (Fig 9.) This dark slit is caused by the coin stretching and holding apart the œsophageal walls. When this is observed we know that the coin is close by, and a careful search should be made especially along the posterior wall. The upper edge of the coin may be hidden by a folding over of the swollen or collapsed mucous membrane of the posterior and lateral walls (Figs. 25 and 26), so that it is possible for the examining tube to ride over and slip past it without it being observed or even touched by the tube, just as may occur at the pharyngeal sphincter. Especially is this the case when a tube with a spatula extremity is used (Fig. 27), the upper edge of the coin being either imperfectly seen or not seen at all, and it is therefore impossible to grasp it with forceps. When, however, a tube with plane or non-bevelled extremity is used (Fig. 28), and of the largest size that can be passed with safety, as it descends it straightens out any loose folds, thus tilting the upper edge of the coin forwards and causing it to become more central and to appear across the opening of the tube, when it can be easily seized.

This was well exemplified in a case where I was recently asked to assist a colleague.

A child, aged 1 year and 3 months, swallowed a bone button the same size as a halfpenny—i.e., 25 mm. diameter. It had been impacted for three days in the cervical œsophagus and its upper edge was so covered by the loose folds of the posterior wall that it was found impossible, after many attempts with a spatula-shaped tube, to see the coin properly and to grasp it. The following day a short tube of 12 mm diameter, with non bevelled extremity was used, with the desired effect of stretching out the folds, so that the upper edge of the button at once presented in front of the tube and was easily removed. A stricture caused by a foreign body may require to be dilated before the foreign body can be reached and removed.

In some cases the swollen and œdematous mucous membrane may cover an impacted coin so as to hide it not only partially but completely, or the coin may become encysted.

Tappey[28] reports the case of a child, 2½ years of age, with a silver quarter of a dollar in the œsophagus. The presence of the coin had caused hyperplasia of the wall in which the coin had become embedded. It was removed by œsophagotomy.

Halsted[29] (Syracuse, N.Y.) refers to the case of a child, aged 5 years, who had swallowed a penny during infancy. It was found encysted in the post-œsophageal wall, and was only released after curetting the wall through the endoscopic tube.

Munro[30] mentions a case in which a halfpenny was retained in the œsophagus of a boy for three years. After death from consumption the coin was found closely embraced by the gullet.

Jewell[31] reported the very interesting case of a child, aged 22 months, who swallowed a halfpenny ten days before admission to hospital, and it became impacted against the post-œsophageal wall. The coin was located by X rays just below the sterno-clavicular articulation, but all attempts to remove it both by forceps and hooks failed, nor could it eve

FIG. 34.—Skiagram showing lateral view of a farthing impacted partly in the cricoidal-pharynx and partly in the cervical œsophagus of a child aged 2 years.

be moved from its bed. Death occurred on the thirteenth day after the swallowing. Post-mortem examination showed that the coin had become almost completely embedded in the post-œsophageal wall, the circumference of the coin and four-fifths of its anterior surface being enveloped by folds of swollen mucous membrane (Fig. 32), and that it had caused death by perforation into the posterior mediastinum. (Fig. 33.)

Kent Hughes[32] had a case in which a halfpenny was swallowed by a child five months previously, and the patient was brought to a children's hospital on account of broncho-pneumonia. There was a history that something had been swallowed, and X rays showed a halfpenny in the posterior mediastinum, and it had ulcerated through the right posterior wall of the œsophagus. He managed to remove it by cutting away part of the clavicle and two ribs. The child, however, died of the pre-existing broncho-pneumonia.

McKinney[33] (Memphis, U.S.A.) reports the case of a girl, aged 2 years, who swallowed a button (the same diamenter as a halfpenny) three or four days previously. Fluids only could be swallowed and with great difficulty. It was impacted just above the sternal notch and caused considerable congestion and swelling of the œsophageal mucosa followed by œdema of the glottis and death.

Friedberg[34] (Chicago) reports the case of a boy, aged 3, from whom a nickel and two pennies (U.S.A.) were removed from the œsophagus at the same time, as they were all stuck together. A foreign body may also be hidden from view by particles of impacted

[26] Trans. Amer. Laryngol. Assoc., 1905, 204.

[27] Discussion on Tilley's case of a penny removed from the gullet in a young girl aged 14. Proc. Roy. Soc. Med., 1910, iii. (Laryngol. Sect.), p. 135.

[28] Cited by Shurley, "Dis. of Throat, Nose and Ear," 1900, p. 664

[29] Laryngoscope, 1912, xxii., p. 1227.

[30] Cited by Durham in Holmes's Surgery, 1883, i., p. 788.

[31] Proc. Roy. Soc. Med., 1915, viii. (Laryngol. Sect.), p. 108.

[32] Journ. Laryngol., Rhinol., and Otol., 1916, xxxi., pp. 150-151

[33] Laryngoscope, 1912, xxii., p. 1227.

[34] Ann. Otol., Rhinol., and Laryng., 1914, xxii., p. 123.

food—e.g., H. J. Davis[33] reported a case where a penny was impacted in the œsophagus of a woman aged 25. The patient was unable to swallow anything for four days. The coin was hidden by grape skins which obscured its view, and was firmly grasped by the œsophageal wall. After removal of the grape skins the coin was successfully removed by œsophagoscopy.

The frequent impaction of small coins — e.g., farthings — accidentally swallowed, which have a diameter of only 10 mm., shows that it is not always the size of the foreign body that determines its stoppage and lodgment:—

Tilley[34] reports a case where he removed by the œsophagoscope a farthing which had been impacted for five hours in the œsophagus of a boy aged 5 years.

H. J. Davis[35] reports a similar case in a child aged 2 years.

Edward D. Davis[36] mentions a third case in a child aged 9 months, where a farthing was impacted in the œsophagus at the level of the bifurcation of the trachea for one month. The child appeared to be unwell, was wheezy, and frequently vomited. By X rays the coin was localised and by means of the œsophagoscope was easily extracted.

The writer has removed a farthing in a child, aged 2 years, which had been impacted at the level of the second dorsal vertebra for 13 days. (Fig. 34.) Neither liquids nor solids could be swallowed for the first seven days, everything being regurgitated; during the last six days, however, the child was able to swallow milk, and even bread and milk with perfect ease, and there was no regurgitation. Beyond being very fretful and constantly crying, the child appeared to be quite well.

Such cases show that the œsophagus may so adapt itself to foreign bodies that food may pass by without giving rise to any marked trouble.

FIG. 36.—Extraction of coin, first position.

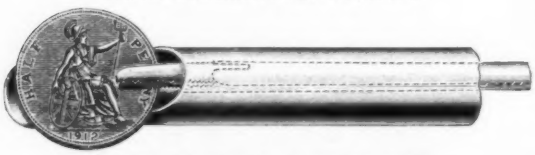


FIG. 37.—Extraction of coin, second position.

FIGS. 36 and 37 show the extraction of a coin by the non-slipping forceps with a spatula extremity endoscopic tube.

Tolerance of the Œsophagus to Foreign Bodies.

That the mucous membrane of the œsophagus is most tolerant to foreign bodies, and especially to pieces of money, is shown by the length of time a foreign body may be impacted without doing any material harm or causing any marked symptoms. Though coins may have been impacted for months and even years with only slight inconvenience, and the disturbance caused by them attributed to other causes, yet, on the other hand, serious complications may occur—i.e., œsophagitis, peri-œsophageal abscess, mediastinitis, ulceration and perforation of the tracheo-œsophageal wall, contractures and strictures (from long-continued presence).

Guisez[39] (Paris) reports the case of a 10-centime coin which he extracted by means of the œsophagoscope, and which had been in the œsophagus for four years. (Fig. 12.)

Halstead[40] mentions the case (previously referred to) of a child aged 5 years, from whom he extracted a 1-cent piece (penny, U.S.A.) which had been impacted in the œsophagus since infancy. It had become absorbed to such an extent that it had lost 25 per cent. in weight, and was not more than two-thirds of its normal thickness. It had lodged in the posterior wall of the cardiac end of the œsophagus and had become embedded or encysted. At the rate of absorption it might have been absorbed in 20 years. In this case but for the X rays the cause of the obstruction could never have been discovered, since the œsophagoscope failed to show it until the wall covering the coin was removed.

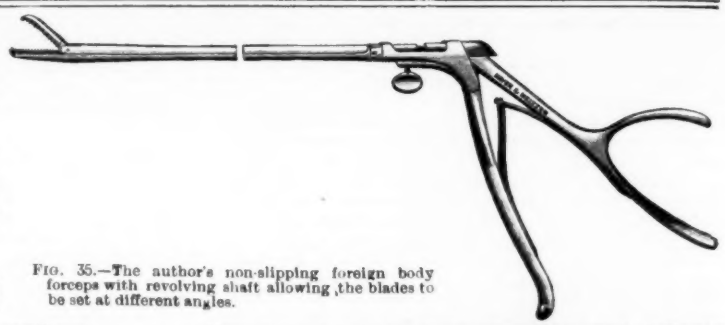


FIG. 35.—The author's non-slipping foreign body forceps with revolving shaft allowing the blades to be set at different angles.

Monro[41] reports a case (previously referred to) in which a halfpenny was retained in the œsophagus of a boy for three years.

Kellock[42] has removed a halfpenny with the coin-catcher from the œsophagus of a little girl which had been impacted for three years, and had caused no symptoms.

D. R. Paterson[43] reports a case where a halfpenny had been in the œsophagus for 18 months, and when removed by œsophagoscopy it looked as if it had been dug out of a Roman ruin; yet it had given rise to no ulceration.

Walker Downie[44] had a similar case, where he removed by œsophagoscopy a halfpenny lodged in the œsophagus of a child. When first swallowed the story was not believed, since nothing passed per rectum, and it was not till 18 months later that the case came into his hands, and the X ray was used and located the coin. No permanent injury to the œsophagus was observed.

Singletary[45] has reported the case of a child, aged 2 years and 3 months, who swallowed a 5-cent piece (21 mm. diameter), which became impacted in the lower part of the pharynx and gave rise to two or three attacks of pneumonia yearly for eight years. Finally, a large amount of blood and pus was vomited and the coin passed per anum, eight years and two months after it had been swallowed.

Porter[46] reported the case of a boy, aged 11 years, who had complained of indefinite gastric symptoms for three weeks. He was small for his age, poorly developed and weighed only 2 st. 10 lb. The father stated that the boy had swallowed a halfpenny at the age of 4, and had never been the same since. An X ray showed the coin lying between the fifth and sixth dorsal vertebra. On introducing forceps it slipped away, passed into the stomach, and was evacuated later in the stools. On careful endoscopic inspection no lesion or ulceration of the œsophageal wall could be detected. In two weeks the boy improved so markedly in health that he had put on 5 lb. in weight.

Perforation of the œsophagus and aorta by foreign bodies.—Are not very rare. Adelmann[47] has recorded 14 such cases, Poulet 17, and Krause 21. Fatal laceration of the œsophageal walls and perforation, especially of the aorta, has occurred in from a few days to four years. Early perforation, however, according to Poulet, is very rare, only 2 cases having been recorded. Generally the foreign body wounds the œsophagus, or as a result of continued pressure may excite inflammation, followed by ulceration, suppuration, and perforation.

Tilley[48] described a case in which a halfpenny had lodged just below the cricoid region in the gullet for five days. On direct examination the coin was seen lying in an ulcerated area, surrounded by œdematous granulations. It was removed with little difficulty, but the child died the same night from collapse. Post-mortem showed that the œsophagus had ulcerated right through into the trachea, and this had occurred in five days.

Wishart[49] (Toronto) states that a 5-centime piece has caused perforation of the œsophagus within 24 hours.

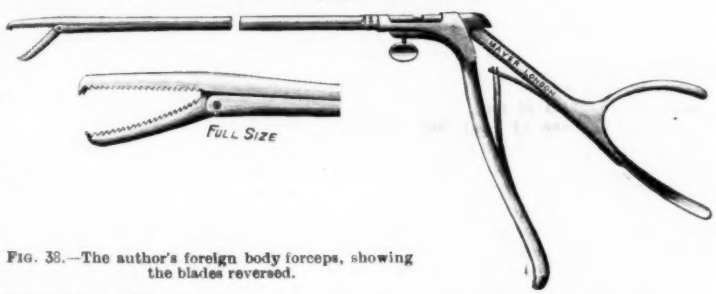


FIG. 38.—The author's foreign body forceps, showing the blades reversed.

[33] Proc. Roy. Soc. Med., 1913, vi. (Clinical Sect.), p. 152.
[34] Ibid., 1914, vii. (Laryngol. Sect.), p. 20.
[35] Proc. Roy. Soc. Med., 1914, vii. (Laryngol Sect.), p. 20.
[36] Ibid., 1910, iii. (Laryngol. Sect.) p. 136; THE LANCET, 1914, ii., p. 493.
[39] Maladies de l'Œsophage, 1911, p. 270.
[40] Laryngoscope, 1909, xix., p. 520; Trans. Amer. Laryngol. Assoc., 1908, p. 108.
[41] Cited by Durham in Holmes's Surgery, 1883, i., p. 788.
[42] Trans. Med. Soc. Lond., 1911, xxxiv., p. 454.
[43] Proc. Roy. Soc. Med., 1915, ix. (Laryngol. Sect.), p. 40.
[44] Proc. Scot. Otol. and Laryngol. Soc., Nov. 22nd, 1913; Abstract Journ. Laryngol., Rhinol., and Otol., 1914, xxix., p. 98.
[45] Louisville Med. News, vol. x., p. 254, cited by Bosworth, Diseases of Nose and Throat, 1892, p. 322.
[46] Proc. Scot. Otol. and Laryngol. Soc., Nov. 22nd, 1913; Abstract Journ. Laryngol., Rhinol., and Otol., 1914, xxix., pp. 97–98.
[47] Quoted by H. Chiari, Berl. Klin. Woch., Jan. 5th, 1914.
[48] Proc. Roy. Soc. Med., 1912, vi. (Laryngol. Sect.), p. 42.
[49] Corps Etrangers du Tube Digestal, St. Pierre l'Union Médicale du Canada, December, 1914.

Grey Turner[50] reports a case where a halfpenny was impacted in the œsophagus of a boy, aged 4 years, for 1 year and 10 months, the boy being able to take his ordinary food and having no difficulty in swallowing. The coin ultimately perforated the aorta and death from hæmorrhage ensued.

E. D. Davis[51] reports the case of a child, aged 2 years, who swallowed a halfpenny. Five years later a little blood was vomited, followed the same night by a profuse hæmorrhage and death occurred. Post mortem it was found that the coin had caused ulceration into the aorta. Also he reports another case[52] where a child, aged 5, swallowed a halfpenny. One week later a radiogram showed the coin in the gullet. It was removed by a skilled œsophagoscopist, but ulceration had already occurred into the left bronchus, and the child died from bronchopneumonia.

Bradley[53] records the case of a man who swallowed a counterfeit half-crown. Eight months afterwards death occurred from sudden

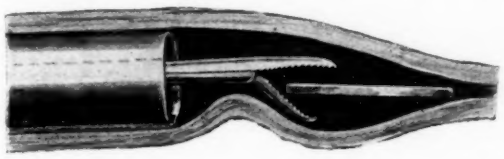


FIG. 39.—Semi-diagrammatic sectional view of the œsophagus, showing the forceps with reversed blade insinuating itself between an œsophageal fold and an impacted coin.

profuse hæmorrhage, and the coin was found to have produced ulceration of the gullet extending into the aorta.

In Jewell's[54] case, already referred to (Figs. 32 and 33), a coin perforated through the œsophageal wall into the posterior mediastinum in 13 days, and caused death. A counterfeit coin[55] has been reported which was impacted for 12 months in the œsophagus of a convict and caused ulceration and perforation of the aorta.

Kellock[56] refers to the case of a lead weight—the diameter of which was just that of a halfpenny—impacted low down in the œsophagus. It ulcerated through and formed an abscess in the mediastinum, eventually causing death in 10 days. He also had a case where a button had been swallowed, and within 10 days it had caused perforation of the aorta.

While it is easy to understand why sharp or angular foreign bodies may give rise to inflammatory and destructive changes in the œsophagus, it is not easy to explain why smooth and circular objects, such as coins, should in some cases cause ulceration and perforation and in others remain harmless and give rise to no symptoms, even though worn and corroded by long sojourn. It is likely that impaction in the neighbourhood of the constrictions, and especially the dangerous regions of the aortic arch, along with excessive spasm of the œsophageal walls, may be the chief predisposing causes. A septic condition of the foreign body and alteration in the secretions may also be a determining factor. D'Este Emery,[57] in discussion, has suggested that the chemical composition of the substance impacted may have something to do with the condition set up, and he considers that whereas copper is a strong antiseptic, as shown by the fact that typhoid cultures placed in a vessel of pure copper become sterile in a few hours, in the case of lead this would not be so. It is interesting to note, however, that metallic poisoning may occur owing to the impaction of copper coins, as shown by the following cases:—

Lee[58] reports the case of a child, aged 5 years, who swallowed a halfpenny. It was forced into the stomach with a bougie. Enteritis followed and death, which was due to the mechanical irritation produced by the passage of the coin through the intestine and to poisoning by the copper, evidence of the existence of the latter in considerable quantities being discovered on testing the mucous membrane and contents of the intestines.

Faucon[59] (Paris) records a similar case.

[50] THE LANCET, 1910, i., p. 1335.
[51] Proc. Roy. Soc. Med., 1915, viii. (Laryngol. Sect.) p., 40.
[52] THE LANCET, 1914, ii., p. 493.
[53] Med. Times, 1868, ii., p. 447, cited by Durham in Holmes's Surgery, 1883, i., p. 787.
[54] Proc. Roy. Soc. Med., 1915, viii. (Laryngol. Sect.), p. 108.
[55] New York Med. Jour., Dec. 10th, 1869, p. 335.
[56] Trans. Med. Soc. Lond., 1911, xxxiv., p. 454.
[57] Ibid.
[58] St. George's Hosp. Reports, 1869, iv., p. 219.
[59] Bull. de la Soc. de Chir., 1877, iii., p. 158.

Distensibility of the Infantile Œsophagus.

It is remarkable what large objects may be introduced even into the infantile œsophagus, and the extent to which its walls are distensible, as shown in the cases reported. The œsophagus of a child aged 4 years, which is no wider than 10 or 12 mm. ($\frac{3}{8}$ to $\frac{1}{2}$ inch), can be so distended that it is capable of admitting an object of much greater diameter—e.g., a halfpenny, which measures 25 mm. (1 inch)—whilst in addition it will permit the free passage of a metal tube of 10 mm. ($\frac{3}{8}$ inch) diameter, and even one of 11 or 12 mm. This is not unusual and is possible even with larger coins and at a much earlier age.

In Halstead's[60] case of a child, aged 5 years (already referred to), from whom he extracted a one cent piece measuring 20 mm. in diameter, it was impacted at the cardiac end of the œsophagus. The child had swallowed it during infancy, and was supposed to be suffering from a congenital stenosis which had caused constant regurgitation of food and almost starvation since infancy. The coin was so encysted that it was necessary to curette the posterior œsophageal wall before it was possible to seize the coin with forceps.

McKinney[61] also reports the case of a halfpenny removed from the œsophagus of a child, aged 15 months. It had been firmly impacted just above the suprasternal notch for six days, and only liquids could be swallowed. It required considerable force to dislodge it.

Rate of Passage of Non-impacted Foreign Bodies.

In those cases where foreign bodies do not become impacted, but safely pass through the food passages, it is interesting to note their rate of passage.

Mosher[62] refers to the case of a baby, aged 1 year, who swallowed a button measuring 25 mm. (1 inch) in diameter. It travelled through the entire alimentary canal, safely negotiated the pylorus, and in 24 hours was evacuated per rectum. It took three days from the time it was swallowed before it was discharged. He also records another case[63] where a mother-of-pearl button, measuring 27 mm.—i.e., 1 1/16 inch—diameter, was swallowed by a child 8 years of age, which passed in a few days and gave rise to no symptoms. Also a metal button in a child aged 1 year and 7 months, which remained at the level of the clavicle for three days, was dislodged by the endoscopic tube, delayed at the cardiac orifice of the stomach, and entered the stomach in 24 hours. In 48 hours it had passed the pylorus and was at the brim of the pelvis. Here it was delayed for three days and was then discharged.

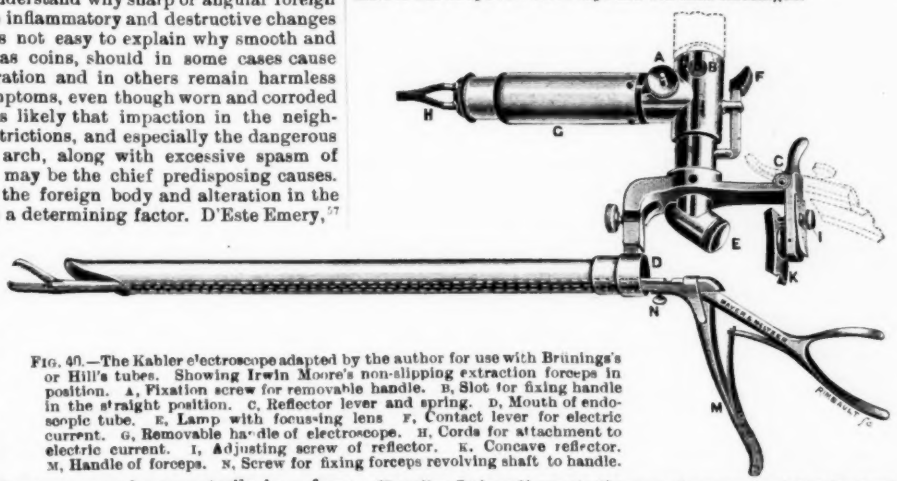


FIG. 40.—The Kahler electroscope adapted by the author for use with Brünings's or Hill's tubes. Showing Irwin Moore's non-slipping extraction forceps in position. A, Fixation screw for removable handle. B, Slot for fixing handle in the straight position. C, Reflector lever and spring. D, Mouth of endoscopic tube. E, Lamp with focussing lens. F, Contact lever for electric current. G, Removable handle of electroscope. H, Cords for attachment to electric current. I, Adjusting screw of reflector. K, Concave reflector. M, Handle of forceps. N, Screw for fixing forceps revolving shaft to handle.

Chevalier Jackson[64] reports the case of a penny located at the level of the cricoid cartilage, dislodged by examination with the examining tube, and passed per rectum in nine days.

It would appear that coins lodge longest of all at the level of the cricoid cartilage, next in the region of the clavicles, and, lastly, at the upper and lower parts of the intestinal canal. They seldom stop at the cardiac orifice, and pass easily and quickly through the pylorus. It is easy to understand why they stick at the back of the cricoid whilst at the sternal level, the thymus gland or arch of the aorta causes constriction of the gullet and may hold them up in this situation.

These cases show the serious dangers of delay, even though in many instances serious symptoms have been long postponed, and that no time should be lost before steps are taken before their removal by endoscopic methods.

(To be continued.)

[60] Laryngoscope, 1909, xix., p. 520.
[61] Ibid., 1912, xxii., p. 1226.
[62] Ibid., 1909, xix., p. 414.
[63] Ibid.
[64] Cited by Ballenger: Diseases of Throat and Ear, 1908, p. 566.

WHEAT CULTURE-MEDIA.

BY SHOZABURO OTABE, M.D. BÂLE,

MEDICAL SUPERINTENDENT (TEMPORARY), NATIONAL SANATORIUM, BENENDEN, KENT; FORMERLY ASSISTANT MEDICAL OFFICER, KENSINGTON INFIRMARY, LONDON; ASSISTANT, BACTERIOLOGICAL INSTITUTION, TOKIO CHARITY HOSPITAL MEDICAL COLLEGE.

SINCE Pasteur[1] and Koch[2] suggested the use of malt extract for culture-media, many bacteriologists have made a trial of the same, but this has not been successful and malt extract has not come into general use. My own studies of the employment of grain extracts cover a period of nearly 10 years. Wheat is not only much cheaper than meat, but it is more convenient to get and to carry about. It is necessary, too, to keep in mind the sporadic influence of pathogenic bacteria and to prepare both vaccine and immune serum, if possible, at the place where the epidemic broke out and from the actual strain of bacteria which caused the epidemic at that locality. For this purpose the first requisite is to get suitable culture-media. In some places it is difficult to get meat or its extract, though it is easy to preserve them, while wheat can readily be obtained almost everywhere and as readily preserved. My experimental results show that there is no more value in meat-extract culture-media than in wheat-extract culture-media.

Method of Making Wheat Media.

1. *Wheat broth.*—A. Roast the wheat (with or without husk) in an iron pan until it becomes brown. B. Put 1 lb. of the roasted wheat without washing into 1600 c.cm. of distilled water. C. Boil this in Koch's boiler for half an hour. D. Strain through a clean cloth. E. Make up to 1000 c.cm. with distilled water if under this quantity. F. Add 0·5 g. of taka-diastase or ordinary diastase and shake the flask well. The temperature of the contents at this time should be maintained at 30° to 40° C. for half an hour. G. Filtration. The resultant fluid ought to be quite transparent with yellowish colour, almost the same as ordinary meat broth. The fluid has a sweet smell, the reaction being slightly alkaline. H. As we make usual broth, add 5 g. of sodium chloride and 10 g. of peptone albumin, then boil and filter.

2. *Wheat agar.*—Add 15 g. (in winter) or 20 g. (in summer) of agar to the above quantity. For the rest the preparation is almost the same as that of meat agar as usually prepared. Many special culture-media can be made of the wheat broth and agar media.

Cultural and Agglutination Tests.

To compare the rate of bacterial growth on the various media I used *Staphylococci albus* and *aureus*, *B. coli*, *B. typhosus*, *B. dysenteriæ*, *Vibr. choleræ*, and others, and found almost the same growth in each case on the different media.

The difference of agglutination reaction of the bacteria cultivated on two different culture media was then tested.

Staphylococcus. *B. coli.*

Dilution of serum.	Cultured on—		Dilution of serum.	Cultured on—	
	Wheat agar.	Meat agar.		Wheat agar.	Meat agar.
10	+	+	25	+	+
50	+	+	50	+	+
100	+	+	10	+	+
200	+	+	200	+	+
300	−	−	400	+	+
			600	−	−

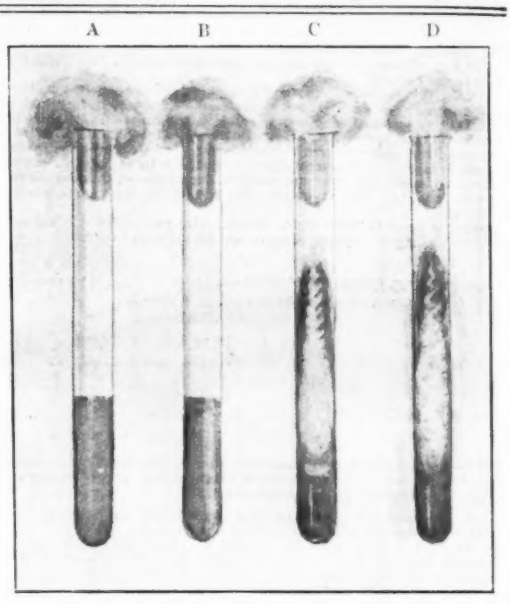
Agglutination positive, +; negative, −.

For therapeutic purposes I have made autogenous vaccines from cultures of the above-mentioned bacteria on wheat media and observed good results.

Summary.

The experimental results given prove that wheat can be used instead of meat for culture media. As the wheat-extract culture-media contains maltose, they can be used as special media for particular bacteria and for diagnostic purposes.

[1] Études sur la bière, Paris.
[2] Mitth. a. d. K. Gesdhtsamte., I., I., Berlin.



Growth of *B. coli* on wheat culture media and ordinary meat media compared. A, Wheat broth; B, Ordinary broth; C, Ordinary agar; D, Wheat agar.

Reviews and Notices of Books.

Trench Fever: a Louse-borne Disease. By W. BYAM, J. H. CARROLL, J. H. CHURCHILL, LYN DIMOND, V. E. SORAPURE, R. M. WILSON, and L. LLOYD. With an Introduction by Sir T. H. GOODWIN, K.C.B., a Foreword by Sir DAVID BRUCE, and a Summary of the Report of the American Trench Fever Commission by R. H. VERCOE. London: Henry Frowde and Hodder and Stoughton. 1919. Pp. 196. 10*s.* 6*d.*

THE findings of the War Office Trench Fever Investigation Committee have now been made available in an attractive volume of the Oxford Medical Publications. The committee, under the chairmanship of Sir David Bruce, was composed of the following workers: Lieutenant-Colonel D. Harvey, Mr. A. W. Bacot, Major W. Byam, Lieutenant-Colonel H. French, Mr. J. A. Arkwright, Sir W. M. Fletcher, Lieutenant A. F. Hird, and the late Professor H. Plimmer; their results are adequate testimony to the great possibilities of well-coördinated research work. It is certainly true that much remains to be found out about trench fever. We are still completely ignorant of the causal organism, as of any efficient means of treatment, but the positive incrimination of the louse as the carrier of the disease puts us well on the road.

It has been argued that trench fever is a war disease and will perish unaided when the trenches are filled in. Sir Charles Burtchaell, in a recent address dealing with disease as affecting success in war, said: "With the cessation of hostilities the disease [trench fever], for the moment at all events, ceased to be of any immediate practical importance, as it was only under the conditions of trench life that there were real difficulties in keeping troops free from lice." The authors do not agree with this view. There is evidence, they say, that the disease has existed since the twelfth century, and certainly so long as lice are allowed to dwell in security among men there will always be the danger of its reappearance. Neither can we afford to overlook the possibility of the human race being again confronted with the horrors of warfare, minor as well as major.

In a foreword written in May, 1918, Sir David Bruce reviews the research work carried out in England, France,

and Germany up to that date, and shows that no satisfactory evidence on the transmission of the disease had been brought forward when the British and American commissions began their task at the end of 1917. He pays a warm tribute to the courage of those who volunteered as experimental subjects, and without whose self-sacrifice no progress could have been made. The account of these experiments in the chapter on transmission makes romantic reading. By means of the very exact work done in the laboratory at Hampstead several conclusions of vital importance to prophylaxis were finally arrived at. Trench fever is not a disease caused by normal lice, but the excreta from pediculi fed on trench-fever patients, applied to an abraded skin area, are capable of producing a febrile illness similar in its relapsing character and general clinical picture to the disease at present known as trench fever. Louse excreta may be virulent without the presence of vermin, and this virulence is retained in the excreta even after so long a period as 120 days. The infection is not communicable by the mouth, but it has taken place through the unbroken conjunctiva. The excreta can infect when introduced subcutaneously, and although the causative organism has not been isolated the outline of its life-history is beginning to take shape. When lice are fed on patients during an afebrile stage of the disease they become capable of conveying the infection. This infection is therefore present in the peripheral blood of the human subject during the afebrile intervals. It is also claimed that the number of trench fever organisms passed by the lice increases as the time from the infecting blood-feed lengthens. The incubation period in the human subject was never less than seven days, but varied up to 16 days as the infecting dose was decreased.

The chronic disease is carefully described, particular attention being devoted to the vagal disturbances of the circulation. There is a short chapter on prognosis which should be useful to members of pensions boards. The main suggestions in regard to treatment are concerned with prophylaxis, and as the most important measure of prophylaxis is the extermination of lice this chapter has a wider application than any other part of the book. It will, for example, be read with interest by those who are at present engaged in suppressing typhus in Central Europe.

The report of the Commission of the American Red Cross Research Committee on Trench Fever—a review of which appeared in THE LANCET of Oct. 12th last year—is summarised by Lieutenant R. H. Vercoe in the concluding appendix. That the louse is the main ætiological factor in trench fever is common to the conclusions of both British and American Commissions, but whereas the British regard the louse-bite as an uncommon mode of .nfection, this is looked upon as the most frequent origin of the disease by the American Commissioners. The agreement is, however, more important to preventive medicine than the difference. The publication of this work should stimulate thought and lead to further important discoveries.

Massage and the Original Swedish Movements. By the late KURRE W. OSTROM. Edited by P. SILFVERBERG, G.D. Eighth edition, illustrated. London: H. K. Lewis and Co., Ltd. 1919. Pp. x.–196. 5*s.* net.

THE author admits that "several movements belonging to the Swedish system have been omitted," and so the reader of this little book will not expect to find in its pages all that is to be known of Swedish massage and movements. It is, in fact, a compendium of elementary lectures. The fundamental positions and Swedish exercises described are clearly expressed and well illustrated. But in other respects the medical man will find much to criticise. For example, almost equal space is devoted to what can only be described as "beauty massage" and to the treatment of all types of recent injury, while the elementary doctrine of inhibiting the action of antagonistic muscles when treating a case of paralysis is referred to as a "recent experiment." The best section is that which deals, very shortly, with spinal curvature, but differentiation is lacking between cases of advanced scoliosis and static or postural curvatures. A short chapter on massage treatment in America leads the reader to the conclusion that the sooner some recognised standard of training is established the better it will be for the general public. The bibliography is unusually full and satisfactory.

Essentials of Surgery. By ARCHIBALD L. MCDONALD, M.D., The Johns Hopkins University, Lecturer on Surgery, Nurses' Training School, St. Luke's Hospital, Duluth, Minnesota. With 46 illustrations. London and Philadelphia: J. B. Lippincott Company. 1919. Pp. 265. 8*s.* 6*d.* net.

THIS volume is an addition to the Lippincott Nursing Manuals. It is designed for the use of senior nurses and is written in the belief that a nurse can assist in the care of her patient more intelligently if she be primarily equipped with a reasonable knowledge of the injuries and diseases with which she is likely to meet. The notes make no attempt to discuss technical nursing details or to provide an elaborate treatise on anatomy, physiology, or bacteriology. The advantage of this is seen in the fact that in so small a volume the author is able to deal adequately with the essentials of surgical disease.

The diagrams are very simple and clear, the subject matter is laid out well, according to systems. At the end of each chapter is a list of demonstrations suitable for illustration of the various points detailed therein which will be of great practical value to those who lecture to nurses. A brief but useful glossary of medical terms is to be found at the end of the volume.

To compile a book of this nature requires knowledge of nurses as well as nursing. It is, moreover, a matter of difficulty to strike the happy medium between a treatise on surgery and a guide-book to the intelligent nursing and treatment of disease. In our opinion the author has succeeded in both these respects. The nurse who is really keen will be able to satisfy her thirst for knowledge of surgery in this book alone; while to the surgeon who is called on to give lectures to nurses this book will be invaluable for both junior and senior courses.

A Manual of Gynecology. By JOHN COOKE HIRST, M.D., Associate in Obstetrics, University of Pennsylvania. With 175 illustrations. London and Philadelphia: W. B. Saunders Company, Ltd. 1918. Pp. 466. 12*s.*

IN this little manual the author has presented the arrangement of the subject he has used for the last 20 years in his teaching. The book contains a considerable amount of information in a concise and clear form. We may not agree with all the author's teaching or methods of treatment, but the work is a good example of its kind and should prove helpful to the students for whom it has been written. Whether it is wise, or, indeed, necessary, to increase the size of such a book by including chapters on diseases of the breast, the urinary tract, and the rectum is a matter upon which there may well be some difference of opinion; we do not think it is. The illustrations are fair, and the index is a good one.

The Exact Diagnosis of Latent Cancer. By O. C. GRUNER, M.D. London: H. K. Lewis and Co., Ltd. 1919. Pp. 79. 7*s.* 6*d.*

THIS book is essentially one for the clinician and clinical pathologist, but in many places the meaning is obscure from the arbitrary use of newly-coined technical terms. Although it would be impossible without voluminous quotations to give a summary of Dr. O. C. Gruner's book, we must remark that statements such as "lymphocytosis indicates relative alkalinity, lymphopenia relative acidity, of the serum," are freely introduced without evidence to support them. The author is an enthusiast, but, we fear, has little prospect of becoming a pioneer until he enshrines his views in less cumbrous language, and is more detailed in his evidence.

FREEMASONS' HOSPITAL FOR PAYING PATIENTS.—Under the presidency of the Lord Mayor a meeting was held at the London Mansion House on Sept. 19th to discuss a scheme for the utilisation of the Freemasons' War Hospital (formerly the Chelsea Hospital for Women) as a nursing home for paying patients of limited means who are members of their craft and their families. It was decided to submit the matter to a meeting of representatives of the lodges which had taken part in the founding of the war hospital, and other supporters, to be held at the Mansion House on Oct. 10th, at 4 P.M.

FRENCH SUPPLEMENT TO THE LANCET

Under the Editorial Direction of

Professor CHARLES ACHARD, PROFESSOR OF PATHOLOGY AND THERAPEUTICS IN THE UNIVERSITY OF PARIS. AND Dr. CHARLES FLANDIN, D.S.O., CHEF DE CLINIQUE A LA FACULTÉ DE PARIS.

DYSIDROSIS: ITS PARASITIC NATURE.

BY J. DARIER,

PHYSICIAN AT THE HOSPITAL OF ST. LOUIS; MEMBER OF THE ACADEMY OF MEDICINE.

DURING the war I have noticed that whenever a soldier, either from the armies or the interior, presented himself at a dermatological consultation for a vesiculo-bullous or squamous eruption limited to the hands and feet, three diagnoses were usually considered: eczema, occupational dermatitis, or dysidrosis; very exceptionally a parasitic mycotic affection was thought of.

It is necessary, first of all, to examine what these diagnoses mean. What is understood by *eczema?* Standing by itself, this term entirely lacks precision. Do we mean *true* or diathetic *eczema*, which I have suggested calling eczematosis? It would then be a matter of a disturbance of metabolism, thanks to which the skin possesses an exaggerated vulnerability and reacts in eczematous form to the slightest and most various irritants. It must be remarked that this morbid state is hardly ever found in the case of adults enjoying good general health, and that there is no reason for the eruption to be confined to the extremities.

Have we got *seborrhœic eczema* in our mind? It prefers to localise itself on the head and trunk, and only reaches the palmar and plantar regions exceptionally, never exclusively. On the other hand, the professional eczemas, whether caused by medicaments or otherwise, grouped under the name of *artificial dermatites*, have their seat in the hands, and are far rarer on the feet. It is well known that the particularly exposed professions are those of mechanic, factory, and laundry hands, scullions, masons, painters, photographers, hairdressers, grocers, and gardeners; that these artificial dermatites can be provoked by a crowd of irritant substances, such as the various forms of mercury, phenol, antiseptics generally, reducing agents, distilled oils, &c. The initial topography of the lesions and inquiry about the occupation of the patient very quickly make it clear whether one can stop at this interpretation. Very rarely one will have to deal with intentionally provoked dermatitis, the origin of which is concealed by the patient. As for *Tilbury Fox's dysidrosis*, *Hutchinson's chiropompholyx*, or simply *pompholyx*, it is a vesiculo-bullous dermatitis, later on squamous in type, which has as essential character its limitation to the hands and feet. According to the authors, the eruption comes on in recurring attacks, especially in spring and summer. It appears symmetrically on both hands or both feet, or on all four extremities at once; it announces itself by a feeling of "burning or tingling." It often comes on after profuse perspirations, violent exercise, or a nervous shock, in both sexes and in adolescents and adults. The authors very generally make it appear that dysidrosis patients are almost always overworked, dyspeptic, neurasthenic, nervously depressed people. According to these data dysidrosis would be a particular kind of eczema arising from sudation or a hyperidrosis in subjects predisposed to it by their general state.

Characteristics of Eczema and Differential Diagnosis.

The following characteristics are specially given as distinctive marks of "eczema": the topography of the eruption; the deep seat of the vesicles, which, especially on the lateral faces of the fingers, resemble "boiled sago grains embedded in the skin"; the fact that the vesicles, and the blisters resulting from their coalescence on an only slightly inflamed basis, have little tendency to burst, do not run plentifully when opened, but on the contrary dry up within 10 or 15 days, leaving circles or polycyclic surfaces edged with an epidermic collar. The relation which T. Fox believed to exist between the vesicles and the sudoriparous canals has been shown to be only accidental by Hutchinson, Robinson, R Crocker, W. Williams, and myself. In none of the publications with which I am acquainted is any mention made of the state of the nails, which I have always found intact in cases labelled dysidrosis.

Within the last 15 years it has been found that various *epidermomycoses* can more or less exactly imitate dysidrosis and the eczemas of the extremities. There is firstly *palmar and plantar* trichophytosis, which Djelaleddin Mouktar was the first to describe clearly to the French Society for Dermatology and in the *Annales de Dermatologie* in 1892, based on the cases which he had observed when working under our master, Professor A. Fournier. As marks distinguishing it from dysidrosis he indicates the following: habitual unilateralness, vesicles less numerous and less scattered, less pruritus; in the period of desquamation extensive erythemato-squamous blotches clearly circumscribed, edged with a very clean epidermic collar, with frequent reproduction of some vesicles within the area of the blotches or on their circumference. Finally, and above all, microscopic examination of the roof of the vesicle and the squamous cells reveals the presence of a sporular mycelium, sometimes very abundant, sometimes hard to discover. In short, this palmar and plantar trichophytosis presents itself in a very special aspect; it ordinarily resembles psoriasis or the syphilides usually found in those regions rather than dysidrosis. Then there is epidermophytosis, with which the works of Sabouraud from 1907 to 1910 have made us acquainted. This mycosis is due to a parasite nearly allied to the tricophyton, the *Epidermophyton inguinale seu intertriginis*, which does not attack the hairs. Epidermophytosis has two favourite seats. In the groin and at the top of the thigh it causes the eruption known as *Hebra's eczema marginatum;* there are bright rosy, round or polycyclic patches, extending rapidly, with clear edges, scalloped and often delicately vesicular. This eczema marginatum may invade the abdomen, the arm-pits and other parts of the trunk, but this is not common. The other very common habitat of the epidermophyton is the interdigital space between the toes. It produces what is known as *intertrigo of the toes* or *intertriginous eczema of the toes*, and betrays itself by a macerated epidermis, covering a red base and sometimes raised by vesicles and blisters. In his article in the *Annales de Dermatologie*, June, 1910, Sabouraud points out that, starting from this centre, the lesions may reach the instep in eczematous form, but according to him they would not invade the smooth epidermis of the fore part of the foot; they are endless in duration. He believes epidermophytosis to be much rarer on the hands; it betrays itself on the lateral faces of the fingers by irregular vesicles, scattered, disorderly, without forming any trace of a circle; their appearance is so exactly like eczema, and in some cases like dysidrosis, that the differential diagnosis with eczema and dysidrosis can only be established by microscopical examination. This reveals in the squamæ and in the roof

PHOTOGRAPHS ILLUSTRATING TRICHOPHYTOSIS AND DYSIDROSIS OF DIFFERENT TYPES.

FIG. 1.—Palmar trichophytosis.

FIG. 2.—Parasitic dysidrosis of the sole of the foot, vesiculo-bullous type.

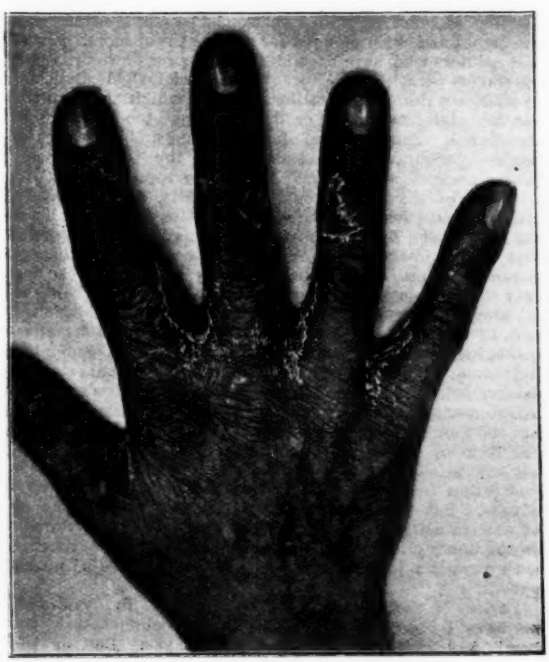


FIG. 3.—Parasitic dysidrosis of the hand, squamous type.

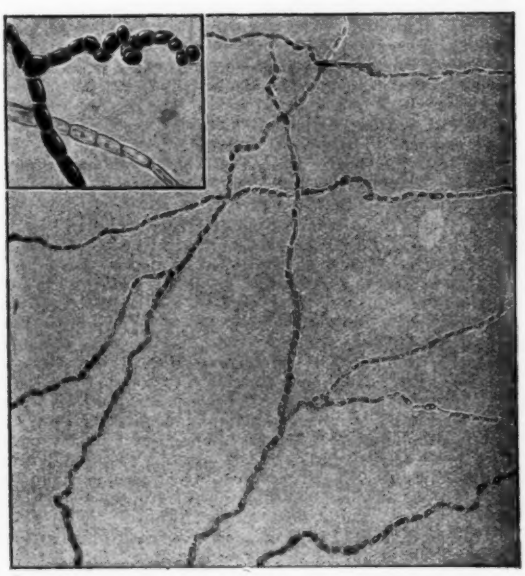


FIG. 4.—Mycelium of the trichophyton in the squamous cells of the epidermis.

of the vesicles delicate filaments of mycelium, slightly *cloisonné*, or on the contrary divided into short, almost cubical elements, sometimes very numerous, sometimes rare and hard to find. In short, the lesions of epidermophytosis of the extremities bear slight resemblance to those of trichophytosis, but great resemblance to those of eczema and dysidrosis.

During the war the ætiological conditions to which dysidrosis is attributed have been realised on a large scale. A huge number, young and adult, of all temperaments, from all classes of society, have been subjected year in year out to repeated exertions, with profuse sudations, and in a word to prolonged overwork; moreover, the causes of dyspepsia have not been wanting, any more than occasions of nervous shock or depression of spirits. In such circumstances one might expect to meet with numerous cases of dysidrosis, especially in certain groups which have been particularly overworked. Now this has not been the case.

Experimental Investigation of Typical Skin Lesions.

Amongst soldiers attacked by vesiculo-bullous or squamous eruptions on hands or feet I have found: 1. A huge majority of secondary eczema due to scabies, sometimes to pediculosis, often to boils, ecthyma, impetigo, and suppurating wounds. 2. A fairly high number of *professional dermatites* explained by the occupations of the patients. 3. Some exceptional cases of *palmar trichophytosis*, an example of which I reproduce here (Fig. 1), verified by microscopic examination and culture, in which I was never able to find out the origin of the contagion. 4. Finally, a respectable number of cases of eruption reproducing the picture of dysidrosis. When I observed them these cases affected one of the following types:—

(*a*) *Vesicular and bullate type.*—On the hands there were generally delicate, clear vesicles scattered or vaguely grouped on the palmar and lateral faces of the fingers, on the palm, and sometimes also on the back of the hand; lenticular or bullous vesicles, often with puriform contents, occupying the fore part or the whole sole of the foot, as in the case depicted here (Fig. 2). Sometimes blisters may have been burst on the march, and I have seen some of them become the origin of lymphangitis.

(*b*) *Vesiculo-squamous type.*—The lesions consist of erythemato-squamous blotches, multiple and scattered, or confluent into sheets, circinate in certain places only, and usually with crumbling edges; these blotches are sprinkled and surrounded with a few vesicles or small brownish crusts resulting from the drying up of the vesicles.

(*c*) *Squamous type.*—There are dry circumscribed desquamations, delicately lamellar or thicker, disclosing rosy and smooth or squamous epidermic surfaces; it is an exception when their shape is circinate or polycyclic, being usually irregular, with wavy edges, which recalls that of eczema rather than that of a parasitic affection. (Fig. 3.) On the feet erythemato-squamous blotches fill the fore part of the foot, often the back of the toes and the neighbouring region, as also the plantar arch, more rarely the heel. They constantly coincide with intertrigo of the toes.

The three types, which I mention here separately in order to emphasise the various aspects which I have met with, are evidently only stages in the evolution of the same eruption, but these stages can coexist at various points of the same extremity. Further, it seemed to me certain that every desquamation does not necessarily follow on a visible vesicular process, and that the affection can persist and progress in the form of dry desquamation. Is this dermatosis really T. Fox's dysidrosis, Hutchinson's pompholyx? Is there not amongst these dysidrosiform or eczematoid eruptions a certain number of cases of epidermic mycoses, and especially of epidermophytosis? In order to find out I have submitted the roofs of the vesicles or the squamæ of these dysidrosiform eruptions on hands and feet to microscopic examination as often as possible. Besides negative cases I have found positive ones, exactly identical with the others, in which I have found, either easily or sometimes with great difficulty, a mycelium analogous to that on Fig. 4.

All the examinations were made by me or under my control in my own laboratory.[1] When the first attempt proved negative we adopted the following method: The shreds of epidermis were fixed and the fat removed in alcohol-ether, then separated with needles in acetic acid, finally cleared on the slide in 40 per cent. caustic potash with gentle heat. It was sometimes necessary for success to make several examinations at an interval of some days and to spend several hours in examining the preparations. I have kept a record of the cases from February onwards. My return refers to 20 patients, three-quarters of whom presented themselves during June, July, and August. In 5 of them all four extremities were affected, 9 had dysidrosiform lesions of the hands, and 6 dysidrosiform lesions of the feet. The total positive results were 11 to 14 for hands and 6 to 11 for feet. I must draw attention to the fact that negative results became more and more rare in proportion as we employed improved technique and greater patience in our investigations; in fact, since September we have only had positive cases, one of which required altogether four hours of work. If I were asked what my general impression is, I should say that I believe to-day that T. Fox's dysidrosis does not exist as a distinct cutaneous disease with a nosological individuality; that the clinical picture portrayed with great perfection by Fox and Hutchinson corresponds to a parasitic dermatosis—epidermophytosis of the extremities. It will be necessary, however, for further investigations to confirm or upset this conclusion, which I fully acknowledge at present goes beyond the range of the facts observed by me. It will also be necessary to make sure by cultural methods which is the parasite in question and whether it always belongs to one and the same species or not. The morphological aspect of the mycelium in the squamæ does not allow of settling the question; this is true of the one depicted in Fig. 4, which is taken from my "Précis de Dermatologie." Sabouraud himself, whom I consulted on this point, told me that he could not say whether it is the mycelium of an epidermophyton that is in question or some species of trichophyton, which alone would certainly be the case if we are in presence of a mycosis of the epidermis.

Mycotic Nature of so-called Dysidroses.

I should like to close by pointing out how the hypothesis set up by me as to the probably constantly mycotic nature of the so-called dysidroses fits in with the clinical facts and, on the other hand, with the classic data of dysidrosis and epidermophytosis. It is said that attacks of dysidrosis usually last for from 10 to 20 days and often recur in the same subject. This is true of epidermophytosis of the extremities, but it must be added that one also sees continuous or subintrant attacks prolonged for six months or more. I have met soldiers who have been made useless for more than half the war by parasitic dysidrosis. Of the ætiological conditions to which dysidrosis is attributed, those which relate to the nervous state, overwork, or dyspepsia are too banal to be considered. The influence of the seasons and the effect of profuse perspiration might consist in the fact that they favour parasitic vegetation. As for the topographical distribution of the lesions, epidermophytosis, like dysidrosis, attacks hands, feet, or all four extremities symmetrically at the same time. Epidermophytosis has in addition a favourite seat in the interdigital spaces of the toes, where it is very common; it may persist there for very many years, causing only slight annoyance or even without the patient being at all aware of its existence; thence it proceeds to invade the rest of the feet and doubtlessly the hands also by autocontagion, thus producing dysidrosiform attacks under the influence of occasional causes. The inguinal site of epidermophytosis, where it betrays itself by Hebra's eczema marginatum, is perhaps nourished from the same source; but the fact that this eczema marginatum often occurs in the form of small epidemics in boarding-schools, asylums, agglomerations of young people, seems to indicate that it is due rather to hetero-contagion by the linen or the water-closets. But it must be remarked that if the coexistence of eczema marginatum in the groin with parasitic dysidrosis on the hands and feet is not very common, its coexistence with parasitic intertrigo of the toes is, as a rule, nearly general.

Lesions of the nails have not been noticed in dysidrosis, nor have I observed them either in epidermophytosis of the hands and feet, save as chance coincidence. But, on the contrary, it is noticed that the nails are very commonly affected in eczemas and professional dermatites of the

[1] I desire to thank Miss Eliascheff, my assistant, whose experience and devotion have been invaluable to me in these investigations.

extremities. It follows that the good or bad state of the nails can, in my view, serve as a retrospective diagnosis of a dysidrosiform attack which would be healed at the time of seeing the patient.

As for the treatment of dysidrosis internal medication is advised, using tonics, and especially arsenic, which can obviously only be intended to improve the general state; soothing dressings and refreshing or slightly disinfectant ointments are recommended. Epidermophytosis, on the contrary, demands repeated rubbing for several weeks with iodised alcohol (from 1 in 60 to 1 in 30) or strong chrysarobin ointment (from 1 in 300 to 1 in 100), together with persistent removal of the desquamating epidermis. I have been able to assure myself that the treatment with iodised alcohol has relieved, and even cured, cases of dysidrosiform eruption in which we have not found the mycelium, probably for lack of enough perseverance in our microscopical investigations.

Conclusion.

T. Fox's dysidrosis or Hutchinson's pompholyx is not a distinct illness; what has been called by that name is only a clinical picture, a symptom-complex which may be called *dysidrosiform*. When they are not artificial, professional, or medicamental dermatitis, the dysidrosiform eruptions are mostly, and probably always, of mycotic nature, and due to the epidermophyton; careful and sometimes very laborious microscopical examination will provide the proof; they must be treated as such. If we want to retain the term dysidrosis it must not be considered as giving a precise diagnosis, but must be completed by some qualifying term, as done, for example, with the term sycosis. Therefore, when one is faced with a dysidrosiform eruption, the problem is to decide between the following two diagnoses: (1) parasitic epidermophytosic dysidrosis; (2) non-parasitic dysidrosis or occupational dysidrosiform dermatitis.

THE CONTAGIOUSNESS OF FAVUS IN MAN.

By R. SABOURAUD.

MOST doctors and all dermatologists are acquainted with the name and symptoms of tinea favosa, its persistence, the characteristics of its straw-coloured crusts, forming a rocky protuberance on the scalp and in consistence, appearance, and method of crumbling away suggesting baked earth or dry clay.

I am not going to dwell on the clinical description of this malady, as I should like to consider it from another point of view. The problem of the contagiousness of human favus and its prophylaxis has presented itself in a specially urgent way during the war on account of the utilisation of African colonial troops, amongst whom favus is of frequent occurrence. It is therefore not without interest to face this question as it actually presents itself, not according to theories or preconceived ideas, but according to the facts.

Nowadays, when the parasite causing the disease is known by all, one is always inclined to conclude that because it is parasitic this disease is very contagious. But one must not *pre*-judge a question, one must *judge* it. History tells us that the contagious character was just as much in doubt before as after the discovery of the parasite.

In general—in our country and colonies and adjacent territories, at least—what one sees are sporadic cases scattered amongst an immune population, amongst which there have always been a few cases. And if we call to mind the ætiological conditions in the midst of which the cases arise, it is poverty, filth, promiscuousness, and destitution which seem to constitute the usual environment necessary to bring them about.

When one examines an accumulation of crusts, or pits, of favus, and sees under the microscope the enormous felted mycelium which forms them, when one thinks what an amount of seed such crusts could produce to create new cases, the conclusion is inevitable that favus is very slightly and very rarely contagious, and that it calls for very special and very rare circumstances for it to be able to implant itself in the human skin. In the midst of a rural, pastoral, poor population, where no ideas of hygiene exist, and where the human being lives very much in the same way as his domestic animals, 10 or 15 cases may be seen, and the number hardly increases. These cases are scattered. If a single family will sometimes produce two or three, there will usually be also healthy children in the very same family who will escape contagion. Most frequently some direct ancestor, father, mother, or grandfather, will be found who has been affected with favus for 30 or 50 years, and has been the origin of the contagion. In this way small centres exist from generation to generation, and no doubt one might find families in which favus has continued for several centuries without having brought any real epidemic. This means that, when not treated, favus is of illimitable duration. The favus patient who is not treated for the disease will die a favus patient; and in the course of an illness of 30 years or more the patient will have created one or two new cases. But these are just the conditions which favour the endemicity and perpetuity of the malady. Each case lasts indefinitely, and produces one or two others in its neighbourhood. Going back a century one would find practically the same picture in the same families. In this connexion nothing is more instructive than Ciarrochi's most circumstantial work on favus in the Transtiberine region.[1] On turning over the pages of the register of the hospital of San Gallicano he was able to ascertain that 5374 cases of favus were treated there during the whole of the nineteenth century, all these cases coming from the province of Rome, and nine-tenths of them from the south-eastern part of the province situated below the Tiber. Nearly all of them came from rural districts. Two-thirds of the patients were boys, one-third girls. The age of contagion, the second stage of infancy; extreme cases from 2 to 18 years. In this way Ciarrochi has traced families which have been producing cases of favus for three generations. And this country which has given birth to 5374 cases of favus—evidently an incomplete return—had at the end of the century just about as many as at its beginning. Extend Ciarrochi's survey and you will have the normal story of favus all over the world. It is always the same whenever observations are made.

Rare Occurrence of Contagious Type.

But can we say "always"? To speak the truth, no, not always; and I must describe the very rare occasions when I have been able to see favus of a contagious, and even very contagious and epidemic type. And as on all three occasions the story has been identically the same, it is probable that it will be found in a similar form again. But it must be emphasised that the facts have been seen only three times in 30 years of close and daily observation. They are therefore exceedingly rare. Even if he gives special attention to these questions, a specialist might never have met with similar cases. They are so rare that some experienced dermatologists who have not witnessed such facts will be inclined to doubt them. But I can guarantee their absolute correctness. A 6 to 12 years old child is brought to the doctor for a crust adhering to the middle of the scalp and refusing to disappear. This crust, grey, flat, as thin as the nail, without relief, very adherent, cannot be moved to and fro on the skin. If you make a fold in the skin the crust breaks and a little serous fluid exudes through the cracks. The colour of this crust is an ash-grey, recalling the colour of wasps' nests in the woods. It is from ½ to 1 mm. thick. If it is removed with the curette, it leaves beneath it the red, moist, bleeding skin, similar to what is found beneath the old conglomerated cups of favus. Examination of this crust in small portions under the microscope shows that it is formed exclusively of felted mycelium like the cup. Culture gives the common Schönlein's *Achorion*, without any peculiarity to explain the strange behaviour of this clinical form, for its behaviour does indeed differ widely from ordinary favus. This crust, which is 2, 3, or even 5 cm. across at its greatest diameter, is formed in a few weeks and increases visibly from day to day. When you meet with this clinical type you may rest assured that in the school to which the

[1] G. Ciarrochi: La répartition géographique du favus dans la province de Rome. C. R. du IVème Congrès international de dermatologie, Paris, 1900, p. 439.

child goes you will see five, six, ten cases of contagion arise, ten cases which will develop with the same rapidity. If the disease is allowed to extend, the crust will thicken at isolated points which will be miliary cups, and later on there will be a rock of crusts. It is therefore a squamous favus at the outset. If favus always behaved like that it would be the most formidable of tineæ. Nothing could be more contagious. But these cases are so exceptional and abnormal that if I had not seen them with my own eyes I should be tempted to charge this description with being exaggerated.

Under certain undetermined conditions, then, common favus may give place to this *papyroid* type, very contagious amongst children and extending rapidly. And as one, so to say, never sees favus at its very beginning, it might be that it begins in this way more often than one thinks and that an old case of favus can pass through a period of reproduction after a long period of apparent stagnation. But that is only a hypothesis. We know nothing of the precise conditions which govern the cases of which I have just been speaking, any more than of the conditions which cause the habitual inertia of the others. In any case it must be clearly noted that these facts have never been observed except in children, and that this form of favus seems, like all favus, to be contagious only in the case of children.

The rare cases in which one can surprise favus at its beginning are mostly cases of favus on the body with circles recalling ringworm, on the circumference of which little golden-yellow cups are scattered. But nearly always in such cases an animal favus of a special species is concerned. Now, nobody has ever seen a single case of favus of the scalp caused in human beings by any other achorion than Schönlein's achorion, human species. Consequently these accidental inoculations of favus from animals to man, which may be observed even in adults, are of little practical importance.

Importance of Age and Hygienic Conditions in Favus Contagion.

I must again insist on the importance of age in favus contagion. Since we have to deal with a disease of indefinite duration and we find it in adults or even old men, we might think that every individual at every age can contract favus. That is a mistake. Ask all the patients you meet and they will all tell you that they contracted favus at school age. From this special point of view of the age of contagion, favus belongs therefore to that class of tineæ the inoculations of which into the scalp are not found after puberty. Doubtless animal favuses are an exception, such as the animal trichophytoses, but they are found only on the body, where they are easily curable. When, therefore, it is considered necessary to isolate soldiers attacked with favus, for fear that they might infect their comrades, it seems to be a precaution which may appear a luxury in time of war. It would be more logical to cure them after the war, before they return home, rather than to deprive the army of men who are otherwise normal, for they will not spread contagion amongst their adult comrades. I am not aware of a single exception to this rule having been observed amongst all our North African troops, or of a single case of the transmission of favus having been discovered in adults.

Another general remark, not without importance, results from observation of our North African Colonial troops. In those regions tineæ are hardly found except amongst the poor and subject populations, both Arab and Jewish; they are not found amongst white colonists, not by reason of any immunity, but on account of the different hygienic conditions. In Fez and South Morocco tineæ are innumerable and favus very common. For until we occupied the country they were considered incurable and were not treated at all. The number is now decreasing daily. Favus is, therefore, more than other tineæ, a morbid type which civilisation ought to remove gradually. Our municipal dispensary in Fez, installed by my collaborator and friend, Dr. Noire, is a model from this point of view. Three radiotherapeutic apparatus are permanently at work, and the natives now present themselves for treatment of their own accord. If this practice is continued there will not be a single case of tineæ in all the region a few years hence.

It is not intended in this place to study the treatment of favus, but this much may be recalled. The treatment, briefly, involves local prophylaxis in the shape of scraping with the curette and 1 per cent. iodine in alcohol. Superficial cleansing having been thus performed, one passes on to curative treatment by means of X rays and 1 per cent. chrysophanic ointment, when it can be borne without irritation. It must not be forgotten that in favus, when the hair grows again after application of X rays, some hairs still remain affected with the parasite, so that complementary epilation in detail is necessary. This can be performed with tweezers, for the eye of a skilled worker can distinguish the doubtful hairs (centring in a red point) amongst the healthy growth. But I will not pursue the matter further, for this is not a therapeutic article but a simple note laying down the conditions ordinarily governing the transmission of favus and the considerations which must guide its prophylaxis.

The French Supplement to THE LANCET—under the Editorial Direction of Professor Charles Achard, Professor of Pathology and Therapeutics in the University of Paris; and Dr. Charles Flandin, D.S.O., Médecin-Major de 2me Classe, Chef de Clinique à la Faculté de Paris—has appeared on the dates given in the following list, which sets out the titles and authors of the contributions:—

Sept. 21st, 1918: (1) The Microbic Diversity of the Enteric Fevers, by Professor Achard. (2) Post-Typhoid Atony of the Cæcum, by Maurice Loeper, Professor of the Faculty of Medicine and Physician to the Paris Hospitals.

Oct. 19th, 1918: (1) What the War has Taught Us about Tetanus, by Louis Bazy. (2) Tetanus Consecutive to Superficial Wounds and to Trench Foot: Treatment and Prevention, by Professor Raymond, Médecin Principal de 2me Classe.

Nov. 30th, 1918: (1) General Review of French Cardio-Pathology during the War, by Ch. Laubry, Physician to the Paris Hospitals, Médecin Major de 2me Classe. (2) Methods of Estimating Augmentation in Depth of Volume of Left Ventricle, by Dr. Bordet, Director of the Radiological Laboratory of the Centre of Cardiology of Professor Vaquez, Hôpital St. Antoine.

Jan. 11th, 1919: (1) Gunshot Concussion of the Spinal Cord, by Henri Claude, Professor in the Paris Faculty of Medicine, Physician to the Paris Hospitals; and Jean Lhermitte, formerly Chef de Clinique in the Paris Faculty of Medicine. (2) Contribution to the Study of the Manifestations of Emotional Shock on the Battlefield, by Cl. Vincent, Physician to the Paris Hospitals, formerly Medical Officer to the 46th and 98th R.I. and to the 44th B.C.P.

March 1st, 1919: The Surgical Complications following Exanthematic Typhus, by Dr. Paul Moure and Dr. Etienne Sorrel, Prosectors to the Faculty of Medicine, Paris, Médecins Aide-Majors de 1er Classe, Surgeons to the French Hospital at Jassy.

April 5th, 1919: (1) Nervous Complications of Exanthematic Typhus, by A. Devaux, formerly Interne of the Paris Hospitals, Médecin-Major de 2me Classe. (2) Note on the Epidemic Diseases Observed in Rumania during the Campaign of 1916–17, by Dr. Henri Vuillet, late Interne of the Paris Hospitals.

May 3rd, 1919: (1) Malaria During the War, by G. Paisseau, Médecin-Major de 2me Classe. (2) Distribution of Soldiers, Temporarily Unfit through Malaria, in Agricultural Colonies, by Professor E. Jeanselme. (3) Studies on Renal Function in Chronic Nephritis, thesis by Pasteur Vallery-Radot, reviewed by Professor Charles Achard.

June 21st, 1919: (1) Recent Work on Cerebro-spinal Fever, by C. Doptər, Professor, Val-de-Grâce, Médecin-Chef to an Infantry Division. (2) Meningococcal Rheumatism and Arthritis, by Dr. Paul Sainton, Physician to the Paris Hospitals.

Aug. 23rd, 1919: Radiological Examination of Pseudarthroses before and after Operations of Bony Grafts, by Paul Aubourg, Professor Agrégé, Cuneo's Laboratory for Radiology. (Centre for Surgery of Bones, Hospital 75, Cannes.)

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THE LANCET.

LONDON: SATURDAY, SEPTEMBER 27, 1919.

Temporary Officers in the R.A.M.C.: The New Contract.

WE published recently the terms upon which the War Office is willing to accept the services of medical practitioners, including those who have been demobilised, who are desirous of undertaking duty with the Army. These terms are, to our thinking, so favourable that we have no hesitation in recommending young medical men to apply to the Secretary, War Office, Cornwall House, Stamford-street, London, S.E., for prompt temporary engagement. There are, indeed, two reasons why we bring forward the invitation of the War Office in what is meant to be a marked manner. The first, which we have already alluded to, is the satisfactory nature of the terms. Having only the recently qualified man in our mind, we would point out that if his application for employment for six months or a year is successful, he will have at the expense of his country an admirable opportunity for travel; he will have nothing to pay; and he will find himself at the end of a short period with £300 or £600 to his credit. It is difficult to imagine a pleasanter as well as a more instructive way of beginning professional life. But secondly, there is to our mind upon some of the newly qualified men almost an onus to assist their country in this way. The medical staffs in India, Mesopotamia, and Egypt are distinctly short, and the result is that the medical officers of the R.A.M.C., both Temporary and Territorial, have to be retained in these areas. Many of these men have surrendered practices at home to serve their country abroad, and they cannot return to those practices until efficient substitutes have been found for them. This is a very hard position for them, as well as for the War Office, whose sympathy for the practitioners in exile is quite sincere. Those at the head of the Royal Army Medical Corps frankly feel the unfairness of keeping these practitioners month after month, and, indeed, year after year, away from home, family, and a suspended career. The situation is unavoidable for the moment, as the men cannot be spared until they are replaced by others. The strain is probably temporary, new men only being urgently required for six, or perhaps 12, months; but for such a period they are needed. Some of the newly qualified men, who have not served in the Army, were absolved from combatant service in order to obtain their medical qualifications, the idea certainly being that, when they were qualified, they would be at the disposal of the country. A large proportion of these may be fairly expected to take temporary commissions now in order to relieve their seniors in the profession, many of whom have served during the last four or five years at great personal sacrifice and in circumstances of high risk. This is still a patriotic call, for the position in the R.A.M.C., as elsewhere, depends on the fact that war conditions do not and cannot cease at the moment of the declaration of peace.

A Defence of Urbanisation.

URBANISATION has been credited with many ills. At every period of life it has been blamed—and, doubtless, rightly blamed—for its maleficent influence. In infancy, for a heightened mortality from zymotic enteritis and the exanthems; at school age, for affections of the nose and throat, and for dirt diseases in general; in adolescence, for the rapid spread of venereal maladies; in adult life, for alcoholism, hyperpiesis, neurasthenia, and phthisis. It takes some courage, therefore, to break a lance in favour of urbanisation, as has been done by Lieutenant-Colonel A. G. LOVE, U.S.M.C., and Professor CHARLES B. DAVENPORT in the *Archives of Internal Medicine* for August, 1919, who boldly contend that life in urban communities produces a general resistance to disease. This opinion is based upon a study of the immunity of city-bred recruits observed during the last four months of 1917 in the 16 large army camps of the United States of America. It rests upon no mere general impression, but upon the records now available in the Medical Department of the U.S. Army, which they have analysed with the equipment of practised statisticians.

The population of the camps consisted of men at ages from 21 to 30 years, taken from their homes and placed in barracks where they slept in beds only some few yards apart, or in tents where they often had an average floor space of less than six square yards. Men from rural districts had, for the most part, never lived thus congestedly, and it was to be expected that their reaction to the new environment should be different from that of town dwellers. The authors report in detail on the incidence of the six principal communicable diseases—measles, mumps, pneumonia, cerebro-spinal fever, scarlet fever, influenza—in the various camps according to their "urbanity," that is to say, according to the proportion of their population drawn from urban communities. The results were similar in each case. We give the actual words of the report in regard to measles, which within three months provided 47,000 cases to study among the enlisted men:—

> "..... the incidence of measles varied greatly in the different camps. This ranged in 1917 all the way from a mean annual admission-rate of 500 per 1000 at Camp Wheeler, Ga., to about 1 at Camp Wadsworth, S.C. The climatic and housing conditions at these two National Guard camps, located about only 100 miles apart, were very similar. Measles was present at both camps. The tremendous difference in the history of the epidemic seems clearly to be due to a difference in the constitution of the population. The soldiers at Camp Wadsworth were seasoned National Guard troops from New York City and vicinity. The soldiers at Camp Wheeler were mainly newly inducted National Guard troops from Alabama, Florida, and part of Virginia, sparsely settled States."

Put into technical language, the correlation between (1) the proportien of men in the Army born in any State who were admitted to sick report for measles, and (2) the urbanity of their respective native States, was found to be − 0·80—a high correlation as correlations go, but inverse (as the minus sign signifies), meaning that the more urban the native State the less susceptible to measles its native-born sons in the Army. The correlation figures for the other epidemic diseases were found to be: mumps, − 0·58; pneumonia, − 0·37; cerebro-spinal fever, − 0·44. What held for measles held in large degree for the other members of the group.

Turning to the explanation, the obvious hypothesis is the one formulated by Surgeon-General

GORGAS himself that (almost in the words of the old riddle) the recruits coming from densely populated areas were immune from measles and mumps because they had had them. Good so far as it goes, but inapplicable to scarlatina, pneumonia, and cerebro-spinal fever. The second hypothesis, that a selective elimination of susceptible individuals has occurred in the urban areas, is also turned down by the authors as not fitting mumps. Mumps does not kill off New York children. A third hypothesis of increased susceptibility in the south for exanthems, as for malaria and hookworm, has no basis in experience or experiment. The only remaining hypothesis is that to which the authors give their adherence, and which we have already enunciated: a general increased resistance to disease enjoyed by urban dwellers. They go on to give a closely reasoned support of the related assumption that any one of the communicable diseases leaves the body in a state of heightened resistance to all micro-parasites. Arising out of the work of J. W. JOBLING and W. PETERSEN[1] in America it will be fresh in the minds of our readers that Sir ALMROTH WRIGHT[2] drew this "collateral" immunisation as one of the pathological lessons of the war, a conclusion to which experience had been pressing him ever since the allegation, made before the Indian Plague Commission 20 years ago, that antiplague inoculation had cured eczema, gonorrhœa, and other ills. A number of quite trite observations point in the same direction: the city dweller's immunity from habitual catarrh which attacks him at once on his return from a long holiday in pure air; the added risk of a post-mortem prick at the end of the long vacation. It may not be much, but urbanisation has something to be said for it

Nurse Anæsthetists.

To use the best that was available was the war maxim, and among other directions the maxim has been applied to anæsthetics, with the result that on many occasions it has proved expedient to utilise the services of the nurse as anæsthetist. Concerning this procedure, in reply to a query, "What do you think of nurse anæsthetists?" addressed by Brigadier-General FINNEY and Colonel G. W. CRILE to the American Base Hospital staff, the answers received were: Very satisfactory, 25; satisfactory, 8; unsatisfactory, 1 (for prolonged operations). It may fairly be deduced that the makeshift gave results agreeable to American surgeons under war conditions. In America, Switzerland, Uganda, the nurse anæsthetist is accepted; she found a place in some of our own hospitals during the war. Is this the beginning of a practice which may become the rule? There is no question that the usual rule-of-thumb technique can be acquired by any nurse of average intelligence, and that after proper instruction she can learn to induce anæsthesia slowly, to prevent respiratory complications, to maintain regularity of dose and therewith of depth of anæsthesia, and to give the needed relaxation. Is this enough for the safety of the patient and for the ease of mind essential for the operator, if he is to exercise all his skill? An anæsthetist is a pilot, who steers the ship of life over a reef-abounding sea to the port of safety. His eyes must be trained to detect dangers at a distance and, ever on the alert, he must spy out rocks before the vessel has touched them. His motto should be: "Me duce, tutus eris." Kismet has no place in his vocabulary. Can the non-medical though trained nurse reach this standard? If not, is it wise to introduce a less equipped order of practitioners, as nurse anæsthetists would be, when, if proper encouragement were given, a sufficient number of qualified doctors, men and women, would take up anæsthetics as a specialty?

In support of the claims of the trained nurse as an anæsthetist it has been pointed out that although nitrous-oxide-oxygen as a routine anæsthetic for long operations counts as dangerous, yet CRILE and LOWER report close on 35,000 cases without a fatality, a nurse in most cases administering the anæsthetic. In 1916 the authorities of Charing Cross Hospital, having decided to broaden the basis of the nursing curriculum, introduced a series of lectures on anæsthetics, including the preparation and observation of patient, general principles, methods, post-anæsthetic sequelæ complications and their treatment. These lectures have since been published in book form,[1] and mark a move in the right direction of education, although difference of opinion may arise in regard to the remark:

> "It is a question whether surgical sisters should not have practical instruction in administering anæsthetics. We move slowly here and guardedly. Our laws are strong to endure, but hard to alter. Many signs seem to me to indicate the approach of a day when chosen nurses will, in their final year, be taught not only the science but the art of anæsthesia."

No one would doubt the desirability of teaching the nurse to give an emergency anæsthetic in case a professional administrator should be unprocurable, and the example of Charing Cross Hospital might with advantage be noted in the curriculum of the Central Midwives Board. When a midwife obtains medical aid for difficult labour, she gives the anæsthetic, but, be it remembered, whatever her ability the doctor is responsible. Some measure of instruction for the midwife would stand him in good stead here, but those who advocate the innovation are, we hope, not blind to the risky side of the advice.

The administration of anæsthetics is not merely the putting of a patient to sleep. The selection of the method and means to be employed in a surgical case are now arrived at after an exchange of opinion between operator and anæsthetist. The surgeon states what he wishes to do, and the anæsthetist, after examination of the patient, suggests how he proposes, with due regard to the patient's condition, to meet the surgeon's needs. The operator, engrossed in his own work, cannot watch the progress of the anæsthesia; for this the anæsthetist is responsible. Even so casualties do occur, and at trivial operations. Would they not be more frequent with a less skilled type of administrator? The position may perhaps be put fairly thus: Trained nurse anæsthetists would do in England as excellent work as they have done in the States or elsewhere; complications must, however, occur: with these the doctor anæsthetist must be able to deal more efficiently than the nurse. Extreme advocates for the latter have said in effect: Doctors order medicines, but they do not administer the dose themselves; with the inference, the operator orders chloroform or ether, it can be dropped on a bit of gauze held over the patient's face by a nurse under the surgeon's direction. There may be surgeons who still desire to be chief of the anæsthetic, as well as of the

[1] Journ. A.M.A., June 3rd, 1916; Arch. Int. Med., June, 1917.
[2] THE LANCET, March 29th, 1919.

[1] Anæsthesia and the Nurses' Duties, by the late A. de Prenderville, LL.B., M.R.C.S.

operating field, but they must be very few. So few that the argument falls. The tendency of the time is to give high credit to the anæsthetist's function, and the suggestion that there is a widespread wish to follow the procedure of certain American centres is ill-founded. On the contrary, American and continental doctors have expressed their admiration for English methods of anæsthesia. At a well-known throat hospital three American specialists recently stated that they employed local anæsthesia for submucous resection because of the difficulty and danger of a general one. They admitted that the operation could be done much more thoroughly, as it was in England, the patient being unconscious. In an address delivered in May, 1915, at Cincinatti, Dr. EMMET F. HORINE remarked that many men in America were beginning to devote all their time to the study and administration of anæsthetics, as had been done in England for many years, with far-reaching results. It is, of course, possible that with such intensive study the traps and pitfalls of anæsthesia may be removed and the way smoothed for the less expert. Analogy does not make this likely.

Annotations.

"Ne quid nimis."

MALARIA IN THE UNITED STATES.

A PAMPHLET dealing with various aspects of the malaria problem in America has recently been published by F. L. Hoffman, LL.D., statistician to the Prudential Insurance Company of America, and chairman of the Subcommittee on Statistics of the National Malaria Commission, who is already known as the author of "A Plea and a Plan for the Eradication of Malaria throughout the Western Hemisphere." The pamphlet is a consolidation and revision of a number of papers read by the author before certain public bodies during the last two years in the course of a campaign against malaria in the United States. He gives a number of interesting facts and figures concerning the disease and the measures he advocates for its suppression. It appears that there are three principal well-recognised endemic areas of malaria in the United States—one large and two small. The first and largest covers the whole south-eastern portion of the States, its southern boundary being the Gulf of Mexico; its western boundary is a line drawn from Eagle Pass on the Rio Grande to Leavensworth, Kansas; the Atlantic seaboard is its eastern boundary, and its northern is a line drawn from Leavensworth, Kansas, eastward some distance north of the Ohio river and extending to the Atlantic on a line with the northern boundary of Maryland. The second area includes a section of the northern part of New Jersey, southern New York State, Connecticut, Rhode Island, and part of Massachusetts. The third is situated in California and comprises the Sacramento and San Jaquin Valleys. Dr. Hoffman endorses the statement that the success of malaria prophylaxis is very largely a question of local conditions and the assistance given by the local and central health authorities. He sets out four different methods which should be applied in conformity with the variations in the local conditions, since a method which may be most useful in one locality may not be so useful in another. The methods recommended, not necessarily in the order here given, are the usual ones: (1) the prevention of the development of the plasmodia in man and their destruction in infected individuals—both of these aims are accomplished by the administration of quinine (that is, quinine prophylaxis); (2) destruction of the mosquitoes transmitting malaria; (3) protection of man from the bites of mosquitoes; and (4) education of the public regarding malarial prophylaxis. In recent years, fortunately, the mortality from this disease in America has been on the decline. The case mortality rate is higher in the coloured population than among the whites. For the two-years' period 1915 and 1916 the fatality rates were 1·2 per cent. for the coloured and 0·7 per cent. for the whites. In order to get better control of malaria, Dr. Hoffman strongly advocates compulsory notification. Some boards of health have, indeed, made its notification obligatory, but these are a small proportion of the whole. So far reliance has had to be placed for the collection of morbidity statistics relating to the disease upon the procedure of the United States Public Health Service, which issues return postcards to medical practitioners asking for a monthly statement of the number of cases of malarial fever treated by them, giving particulars as to race, type of disease, and whether the diagnosis has been microscopically confirmed. The result is as unsatisfactory as such postal returns always are. Hitherto only about 13 per cent. of those receiving these postcards have sent replies, and the answers received from some districts are much more complete than the replies from others. The fuller information may be due either to the greater activity of the local health department or to the greater interest in the public welfare on the part of the local practitioners. Where the State boards of health are efficient, better results are obtained. In Dr. Hoffman's opinion the completeness of the notification of disease may be taken as a fairly dependable index of the efficiency of the Health Department and of the sanitary knowledge and training of its personnel. He regards the neglect of notification by general practitioners as a very serious dereliction of duty, and those who thus fail in the discharge of what is a public service "should be punished according to law to the fullest extent." He would treat with equal severity any local or State board of health which is unwilling to enforce the notification of malaria or other communicable disease, and adds that "incompetent officials should be dealt with according to their deserts." He further states that owing to the regrettable inadequacy of the notification returns of malaria the data published by the Public Health Service in their present forms cannot be utilised to much practical advantage. There is much that is useful and instructive in Dr. Hoffman's pamphlet.

INDUSTRIAL FATIGUE AND ACCIDENTS.

TWO further reports[1] have just been issued by the Industrial Fatigue Research Board. Dr. H. M. Vernon's illustrated description of the millmen's work in tinplate manufacture, his investigations into the influence of hours of work and of ventilation on the output, and his suggestions of improvements in factory appliances and methods

[1] Reports of the Industrial Fatigue Research Board. No. 1: The Influence of Hours of Work and of Ventilation on Output in Tinplate Manufacture. No. 4: The Incidence of Industrial Accidents upon Individuals, with Special Reference to Multiple Accidents. Published by H.M. Stationery Office. 1919. Price 6d. each net.

and in clothing, all indicate very clearly not only how arduous a task is the making of steel sheets, but also what can be done by employers to increase production and at the same time to reduce the discomfort, the fatigue, and the dangers to health of the employees. He finds an increase in total output of 8·3 per cent. when six-hour instead of eight-hour shifts are worked. His data indicate the possibility of still greater improvement in output by the installation of thoroughly efficient ventilation. He points out that the men stream with sweat within a very few minutes of starting work, that they are far more subject to rheumatism and neuralgia than various other classes of manual workers, and that throughout the shift they wear the same trousers and pants in which they journey to and from the works. He suggests several improvements, already adopted in certain American mills, which would conduce to diminution in needless physical effort and to lessened fatigue. One of the recognised consequences of undue fatigue is an increase in the frequency of factory accidents. Dr. Major Greenwood and Miss H. M. Woods, however, find in their report evidence of another factor in the determination of such accidents which has hitherto escaped attention. Certain workers are found to show a special susceptibility to accidents. They should, for their own sake and for that of their fellow workers, be transferred to less risky occupations. Further inquiry is obviously needed to discover what are the reasons and the remedy for such susceptibility. It may be that the individuals in question are unusually careless, nervous, or clumsy. At present we are quite ignorant of the cause or causes. The psychological examination of the susceptible worker would prove an interesting and valuable piece of future research.

THE PRINTED LIE.

LATELY a distinguished layman, reviewing the results of the war, remarked that the chief thing it had proved was the power of the lie to mould public opinion. This hardly comforting finding might have been foreseen. In the sphere of science error wilfully propagated is rare, but in the troublesome business of governing men it is, up to date, almost inevitable; as mordantly shown by Swift, and (to put the lady in very good company) in Vernon Lee's account of "vital lying." One reason why science is so much freer from falsehood than politics is that those interested in the former, being better educated, are much less credulous of what they see in print—having, indeed, constantly before them the garbling of scientific matters in the daily press. But the ordinary citizen, who has time and inclination for one newspaper only, believes its calumny by commission and omission just as readily as its reports of football matches. Again, in science, dealing as it does with exact and rational matters, truth prevails much more quickly than in the uncertain domain of the human heart and will. Nevertheless, the lie has been met with in medicine. The not rare phenomenon of patronised professors writing to order is little seen, although some perviousness to social influences may exist. But there is danger of it when millionaires endow and maintain a large organisation for research, especially considering the direction of the sociological trend of sanitary science. Merciful deceiving of a moribund patient is not an instance in point, if only that every wise practitioner safeguards himself by enlisting the coöperation of the patient's relatives, whom he leaves in no doubt as to the facts of the case. Where the written lie is chiefly operative is on the commercial side. Very few baseless medical certificates of physical incapacity for war service came to light, although, of course, some must have remained undetected, the responsibility for them occasionally being on the shoulders of men of high professional position. The public estimation of medical certificates is, indeed, on the whole, high. Articles written ostensibly to serve research, but really in the interests of the vendors of some drug, appliance, or bacterial derivative, have been dealt with by medical organisations in more than one country. Such communications cannot be hard to detect by the fairly experienced, but they do much harm. The sacred thirst for truth is the motive of all fruitful research, and although an upholder of a dying theory or remedy (generally the latter) may write, as Samuel Johnson sometimes talked, "for victory," it is mostly unconscious, not deliberate, mental bias which puts a man into this posture. In science, which represents a high triumph of human culture over nature—which is, of course, non-moral to the core—truth reigns as nowhere else. Here especially does the American writer's epigram hold good that truth will survive being run over by a locomotive, while error dies of lockjaw if it pricks its little finger. And although these last five years have indeed shown that to political lying and vital lying must be added a third variety, to wit, war lying, yet happily from the severe injuries truth has sustained she is now slowly making sure recovery.

GANGRENE DUE TO CARBON MONOXIDE POISONING.

IN the *Journal of the American Medical Association* of August 30th Dr. J. E. Briggs has reported a case of a very unusual complication of carbon monoxide poisoning. The case is of interest not only on account of the rarity of the complication, but because it shows the danger, which is not generally recognised, of exposure to the exhaust gases of the internal combustion engine. Three brothers went for a fishing trip in a motor-boat. Before starting the exhaust pipe had been disconnected preparatory to installing another muffler. The exhaust was ordinarily carried out along the bottom of the boat, but the pipe was disconnected within 3 feet of the engine, leaving the open exhaust in the cabin, which was 15 by 7 feet. One of the brothers went to the cabin and lay down. After a time another went to arouse him, but after 15 minutes had not returned, and the third noticed through the open door that he had suddenly fallen forwards. He shut off the engine and rushed in. He found the first brother lying on the floor about 8 feet from the engine, and the second about 4 feet from it and dead. The first, who was breathing, was carried out of the cabin, and efforts were made to revive him. At first he talked incoherently. He was taken to hospital and treated for what appeared to be second degree burns of both hands and feet. His back, as well as that of the dead man, was covered with large tense blebs. These were punctured, trimmed, and dressed with boric ointment. He was discharged, but the affected areas enlarged and extensive gangrene followed. A month after the accident he was admitted to hospital under

Dr. Briggs's care. There was gangrene of the entire three middle fingers, one-half of the inner border of the thumb, and an extensive area of the little finger of the right hand. In the left hand gangrene affected the distal phalanges of the four fingers and the flexor surface of the thumb. There were also on the right side gangrenous areas on the outer border of the tibial region, the external malleolus, the outer border of the dorsum of the foot, and small patches on three toes. On the left foot were gangrenous areas at the distal end of two toes. The location and character of the lesions showed that they could not have been due to exposure to heat. The gangrene was dry, and affected skin, muscle, tendon, periosteum, and bone, and extended into several joints. Lines of demarcation were well established. Amputation of the three fingers of the right hand at the metacarpo-phalangeal joints and of the four fingers of the left hand at the middle of the second phalanx was performed. Two similar cases have been recorded. Alberti[1] has reported a case of extensive gangrene of the musculature of the throat and paralysis of the left leg after carbon monoxide poisoning. The patient was overcome by the gas escaping from a stove. He awoke with pains in the head, and on attempting to rise fell unconscious. Paralysis of the right foot and painful swelling of the right elbow, pain in the arm, and stiffness of the neck followed. On the right side of the neck a dry, brownish-black, mummified area of the size of the palm appeared. A line of demarcation formed. It was necessary to incise to a depth of 2 cm. before blood, mixed with dark-brown fluid, appeared. The gangrenous areas extended and he died 26 days after the poisoning. A. Maclean[2] has reported the case of a patient found unconscious in his room with a small gas burner open, in which the flame had been accidently extinguished. The gas contained 7 per cent. of carbon monoxide. A week later he complained of pain in the feet and legs, and was admitted to hospital because they were swollen and discoloured in patches below the knee. During the next two weeks the pain continued, the legs became œdematous, and the discolourations became gangrenous. Both legs had to be amputated. Recovery ensued.

THE CENTENARY OF THE HUNTERIAN SOCIETY.

THE Hunterian Society was founded in the year 1819, and even in its early days, judging from the reports in our own columns, the discussions seem to have been attended with a vivacity unknown at other medical societies of London. To give a single example: At the Hunterian Society in May, 1826, a Mr. Waller related to a critical audience his personal experience of transfusion in the treatment of conditions of dangerous hæmorrhage. His remarks were not well received, and the president, in summing up, commented on the fact that the speaker had omitted to employ one important remedy—namely, "glysters of chicken-broth." More recent meetings, although curtailed by war conditions, have dealt with equally live topics, and a full programme is planned for the coming winter session. Meetings will be held on the second and fourth Wednesdays in the month from October to April at 9 P.M. at the School of Oriental Languages (formerly the London Institution) in Finsbury-circus. A special address by Professor Arthur Keith, F.R.S., will be given on Oct. 8th in the Hall of the Society of Apothecaries. The Centenary Dinner takes place on Oct. 22nd, when Sir Norman Moore will propose the health of the Society. Sir William Osler has undertaken to deliver the annual oration. The present officers of the Society are Dr. W. Langdon Brown, president, Dr. F. Howard Humphris and Dr. R. L. Mackenzie Wallis, honorary secretaries. We wish the centenarian City medical society a renewed youth and vigour.

[1] Deutsch. Ztschr. f. Chir., 1884, p. 476.
[2] Journ. American Med. Assoc., May 20th, 1911, p. 1455.

THE OPENING OF THE WINTER SESSION.

THE new session of the London Schools of Medicine which is upon us is likely to be noteworthy in one particular especially. It will see the inauguration of research clinics in several schools with a recognised authority at the head of each, who will devote the whole of his time and interest to the advancement of his special subject. At University College Hospital Dr. T. R. Elliott is mentioned as the director of the medical clinic; at St. Thomas's Hospital Sir Cuthbert Wallace has been made responsible for the establishment of a surgical unit; St. Bartholomew's Hospital is fortunate in finding men like Sir Archibald Garrod and Mr. G. E. Gask to preside over the medical and surgical research departments respectively. It is too early to presage the kind of development to which these appointments will give rise, although it is certain that they will enhance the reputation of the London School of Medicine as a research and teaching centre. A substantial step will have been taken towards founding that solid basis of undergraduate and graduate study in London which is befitting to a city of the size and position of the metropolis.

A NEW MEDICAL JOURNAL.[1]

THE *Journal of Industrial Hygiene* combines two innovations. This is the first serial publication devoted to occupational health, that branch of preventive medicine which is so rapidly coming to the front. Contributions to industrial medicine have heretofore appeared in publications dealing with general hygiene, medicine, or surgery; they have nowhere been collated, and those interested in the subject have had to watch all journals or run the risk of missing important papers. Secondly, it has an international editorship, American and British. This coöperation between two of the greatest industrial countries in the world is admirable, and is a sign of scientific friendship from which only good can come. The two nations are bound to be industrial rivals, but friendly rivalry is good for both; and joint action will assist in keeping it friendly, stimulate a proper emulation in effort to improve the health of both peoples, and stand ever in the way of jealous animosity. From both points of view this new venture deserves success. The journal, which in the excellence of its printing and of its reproductions of diagrams and illustrations holds out a challenge to many of our home publications, is produced by the Macmillan Company in America; hence we presume the predominance in the first two numbers of American contributions. The names, however, of those in this country who coöperate in the editorship should ensure in future numbers

[1] The Journal of Industrial Hygiene, Macmillan Company, Fifth Avenue, New York.

adequate representation of British thought and research. The first number makes its bow with an article by Dr. Mock, who traces the development of industrial medicine in the States, and points out the stimulus it received during war-time. In this country, too, through the action of the Ministry of Munitions, war-time employment gave great impetus to the movement which we hope may hereafter be duly recorded. The writer sums up: "Thus, in the course of one short decade broad humanising principles, combined with scientific, medical, and surgical work, have permanently established in the medical profession this far-reaching health service—industrial medicine and surgery." Both the first and second numbers contain contributions from Dr. Alice Hamilton, who, in an interesting, if somewhat discursive, way, deals with her own specialty—industrial poisons; but in attempting to cover intoxication from lead, zinc, copper, brass, arsenic, antimony, mercury, carbon bisulphide, phosphorus, and carbon monoxide in two articles, she hardly does justice to her subject or herself. The most important paper is undoubtedly that of Dr. Spaeth on the "Problem of Fatigue." It is the best exposition of present knowledge on the subject we know, and is accompanied by an excellent and exhaustive bibliography. The author summarises laboratory experimental research and chemical knowledge of vital activity; and then proceeds to discuss practical methods of investigation in the industrial world by testing individuals and by measuring output, accidents, lost time, and sickness, all of which he holds may be expected to throw further light on definite aspects of the subject. Psycho-physiological tests are condemned as impracticable under industrial conditions; but research into reflexes and objective tests is recommended as likely to prove of value. The relation of hours of labour to efficiency is held to establish the superiority of a shorter working week, at any rate so far as the eight-hour and ten-hour shift systems are concerned; and the author holds that "the men who planned such a radical industrial programme (as the eight-hour day) were possessed of a profound wisdom and social vision." This article should be carefully read not only by medical men but by employers and employed, for it is not unknown for the workmen to desire, tempted by pay, to defy hygienic laws. Dr. Anna Richardson tells from her own experience of the value of medical service among telephone operators. This contribution should be of use to factory medical officers in indicating the work there is to do, and the way in which records can be scientifically analysed. Dr. Austen sets forth his work in examining factory employees before engagement, and points out its value. He places to the credit of efficient health service: "(i.) diminished labour turnover; (ii.) diminished loss of production, due to absenteeism; (iii.) increased efficiency and lessened cost of production, due to higher grade employees; (iv.) diminished industrial liability to accidents, due to elimination of physical and mental defectives; (v.) diminished moral hazard, due to the fact that venereal-infected employees are only conditionally employed; (vi.) diminished labour cost, due to the reduction of the excessive overhead charge which results from transferring employees who are working at a physical disadvantage; (vii.) a hospital and dispensary place employees in direct personal touch with the entire organisation, and show such employees that their company recognises that healthy individuals are the most vitally necessary part of its success." A paper on health by an engineer, Professor Whipple, is excellent in itself, and valuable as surveying hygiene from an essentially practical point of view; the view of one who has to accomplish what the medical scientist declares should be done, whether in mosquito control, drainage systems, or factory construction. Other articles deal with "Chip Fractures of Terminal Phalanges," by Dr. Hurley; and "The Use of Army Gas Masks in Industries." Not the least valuable part of each number is a supplement giving abstracts of the current literature of industrial hygiene. Each notice is signed by the abstractor, which is likely to ensure more careful work than anonymity; and the notices are for the most part of such reasonable length that the reader can obtain a real idea of the work mentioned—a point where many abstracts of literature fail even to the extent of being little more than bibliographies. The standard maintained here is, however, uneven, and we recommend the editors to watch carefully this important part of their journal. We are so confident this journal meets a need, and has before it an opportunity of doing great and useful work, that we intend keeping our readers informed from time to time of the progress made.

THE COMPLEAT MASSEUR.

THE programme of the Conference of the Incorporated Society of Trained Masseuses, announced for Oct. 2nd–4th, suggests the stirring of new life. We may associate it with the petition recently addressed through the Board of Trade to His Majesty in Council begging that a Charter may be granted to a society to be known henceforth as the Chartered Society of Massage and Medical Gymnastics. The object of the proposed society is to unite together the older Society of Trained Masseuses, which was founded in 1894 and incorporated in 1900, and the more recent foundation, the Institute of Massage and Remedial Gymnastics, which was founded in 1916. Up to the time of the foundation of the Incorporated Society of Trained Masseuses 25 years ago, massage treatment in this country was in a parlous state. Anyone who chose could pose as a masseur, and training was so limited as to be almost non-existent. Small wonder, then, that the Swedish masseur became the traditional instrument to employ when ordering "massage." Thanks almost solely to the untiring efforts of the founders of the Incorporated Society and their successors—a faithful and disinterested band whose work has received all too little recognition—the art of massage was raised step by step from the lowest depths and placed upon a basis which, though still far from perfect, can only be considered as remarkably good. The lamentable lack of interest shown by the medical profession as a whole has been the main stumbling-block in the road of progress. Many medical men have studied and practised electro-therapy in recent years; there are few who would not be hard put to it if invited to carry out themselves the simplest of massage treatments, and fewer still who could write out a table of exercises applicable to a particular condition. The result is that most medical men who order "massage" or "exercises" are incapable of discerning between good and inefficient work and,

judging by results alone, are liable to extol or deprecate without discrimination.

In an article in a recent number of the *Journal of the I.S.T.M.*, Dr. Carl Westman points to the remedy. He advocates:—

(I.) "Compulsory visits for all medical students to the massage departments and opportunity for special training of those interested, such course to run concurrently with the medical studies."

(II.) "The adaptation and development of the treatment along scientific and rational lines."

The former suggestion will save the medical man of the future from ignoring one of the most valuable methods of treatment in his armamentarium. The second will then follow as a corollary. Dr. Westman goes on to advocate a revised and standardised training for masseurs (including "masseuses"), with abolition of the present six months' course certificate. It may be it is possible in six months to acquire a smattering of what is generally included under the term massage, a poor remedy on which to rely in remedial work. For surgical or orthopædic cases a knowledge of Swedish remedial exercises is essential, the period of training required for admission to the existing examination being six months. A year's training is therefore an irreducible minimum for the fully qualified masseur. The formation of a register of persons qualified to practise massage, and the penalisation of quackery, would then protect the public from the danger of the uninstructed dabbler in remedial gymnastics. At present the gymnastic directors in this country have been trained in the two or three years' course at one or other of our leading physical training colleges. Their isolation from hospital work is the one great flaw in an otherwise magnificent training. These qualified gymnasts require recognition and protection, as well as the others who are more especially trained in medico-physical treatment. The granting of a charter should soon make it possible compulsorily to extend their training so as to embrace the full course of massage, Swedish remedial exercises, and electro-therapy.

THE COST OF HOUSING THE PEOPLE.

Sir Kingsley Wood, M.P., Parliamentary Secretary to the Ministry of Health, speaking at Brighton, urged his hearers to set off against the cost of modern house building the gain in health which the nation might expect as the result of better accommodation for its humbler members. This is probably the wisest, if not the only, way in which the matter should be looked at. The community has to contemplate a prospect of expenditure which, judged by the ordinary standard of probable pecuniary return, it would not be justified in undertaking. There is, however, this consolation, that the Ministry of Health, so Sir Kingsley Wood declared, was not going to be satisfied to emulate the jerry-builder of the past, and we hope to see new houses in which the saving in repairs will to some extent compensate for the initial expenditure on their production. It is to be regretted that when a man, or the nation, comes forward with money to spend and an object which has to be attained by its expenditure, he and, more than he, the nation, finds at once every one's hand against him. It will not be a hand raised in violence; its energies will be concentrated not upon taking his life, but upon emptying his pockets. Sir Kingsley Wood referred to claims provisionally made as to the price of land for houses, amounting in the aggregate to £587,000, reduced by efficient valuation by £143,250. This is a reduction of not much less than 25 per cent. The building of houses by tender is not on quite a similar basis with the acquirement of the land for them. The cost of the houses of the class referred to was quoted by Sir Kingsley Wood as being about £700, minor details and accessories giving a certain amount of opportunity for economy to those desirous of effecting it. The audience at Brighton were reminded of the power of local authorities to contract with builders for the purchase of houses erected by the builders themselves.

PUBLIC-HOUSE REFORM.

THE virtues and vices of the existing licensing laws have been carefully considered by a sub-committee of the Brewers' Society and the National Trade Defence Association, who have issued an interesting draft of a new Licensing Bill this week. New licensing authorities, reduced hours of sale, and fresh penalties for inebriety—all involving somewhat drastic changes—are proposed, but the most interesting part of the Bill deals with an attempt to make the public-house a place comparable with a tea-shop or café. Too long has the liquor trade confined its business to merely the sale of liquor, and they realise now the mistake of not making the "pub." a centre of real and varied public refreshment and entertainment. Supposing that legislation should ensue upon this Bill, there will be difficulty, of course, just now in adapting existing premises to meet this much needed reform, but the policy of rendering places of refreshment airy and commodious, providing in them wholesome food and non-alcoholic beverages, is so sound that expense should not stand in the way. Moreover, money so spent would be a good investment. That the stuffy and unwholesome gin-palace and the dirty, offensive public-house must go, and decent rendezvous of refreshment substituted, has been for a long time a very general decision.

THE Home Secretary is about to appoint an inspector under the Cruelty to Animals Act. The appointment will be for a term of four years in the first instance and the salary will be £800 a year, together with war bonus on the scale authorised for the Civil Service and travelling allowances at the usual Civil Service rate. The inspector will be required to give his whole time to his duties. Candidates for this post who possess the necessary scientific qualifications required for the work should apply to the Private Secretary, Home Office, London, from whom further particulars may be obtained. Applications should be accompanied by one or two testimonials and particulars of the candidate's qualifications, and should reach the Home Office not later than Oct. 10th, 1919.

"THE LANCET" OF JAN. 18TH, FEB. 8TH, 15TH, MARCH 1ST, AND JULY 5TH.

THE Manager will be obliged to readers who have not any further use for their copies of THE LANCET of the above dates if they will kindly return them to him at 1, Bedford-street, Strand, W.C.2. The postage on the first four numbers is one halfpenny each, and on July 5th one penny. He will be pleased to pay for those returned.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

Death of Professor Trail of Aberdeen University.

THE death took place at Aberdeen on Sept. 18th of Professor J. W. H. Trail, who had occupied the chair of botany at the University of Aberdeen for 42 years. Professor Trail, who was 68 years of age, was born at Birsay, Orkney, and was educated at Aberdeen University, graduating M.A. in 1870, M.B., C.M. (with honours) in 1876, and M.D. in 1879. From 1873 to 1875 he acted as naturalist to an exploring expedition in Northern Brazil. In 1877, at the early age of 26, he was appointed regius professor of botany at Aberdeen University, which appointment he held up to the time of his death, when he was senior member of the Senatus. He was a Fellow of the Royal Society and of the Linnæan Society, and had made many contributions to scientific journals on botanical and zoological subjects. Outside the University he was also well known for his activities in public life in connexion with the subject of education.

St. Andrews University: Chair of Natural History.

The University Court of St. Andrews unanimously appointed Dr. James Fairlie Gemmill to the chair of Natural History in University College, Dundee. Dr. Gemmill is a distinguished graduate of Glasgow University, and held there the posts of lecturer in embryology and lecturer-assistant in zoology. He was also first president of the Scottish Marine Biological Association, which he was largely instrumental in founding.

Election of Direct Representative for Scotland to the General Medical Council.

Dr. Michael Dewar has issued to the profession in Scotland an address, in which he offers himself as a candidate at the election to be held in November next for appointing a Direct Representative for Scotland to the General Medical Council. Dr. Dewar is a graduate of Edinburgh University, and is well known locally for his work in connexion with the National Health Insurance Bill, both as regards its terms and administration, the British Medical Association, the Central Midwives Board (Scotland), and the Medical and Dental Defence Union. Dr. Dewar stands as a general practitioner in active practice, and is in favour of—

(1) A fairly high standard of proficiency in general education for entrance to the medical curriculum.
(2) The compulsory inclusion in all entrance examinations of the following subjects: English, Latin, mathematics (including algebra and arithmetic), and an additional language.
(3) The recent action by the General Medical Council in approving of the various examinations as qualifying for registration of medical students.
(4) The maintenance and extension of the supervision of the professional examinations by the Council.
(5) The establishment of a one portal system for admission to the medical curriculum and to the medical profession.
(6) The total prohibition of unregistered dental practice, due regard being given to those who have been practising dentistry for some years.
(7) The necessity for the inclusion of as many general practitioners in the Council as are allowed by the 1886 Act to assist in dealing with penal cases.

He is to address meetings of the profession throughout Scotland in various centres during the month of October for the purpose of further explaining and amplifying his views.

Public Health (Notification of Infectious Disease) Regulations (Scotland), 1919.

A new Order amends the form of certificate to be given by a medical practitioner under Section 3 of the Infectious Disease (Notification) Act, 1889, especially in the direction of requiring the following additional particulars:—

Measles.—Date of first appearance of rash.
Tuberculosis.—Localisation of the disease. Occupation. Usual place of residence (if other than that given in the notification). Is patient an insured person under the National Insurance Acts?
Ophthalmia neonatorum.—Date of birth. Name and address of parent or other person (if any) having charge of child.
Malaria and dysentery.—Is this patient's first attack? Was patient infected abroad?

Sept. 21st.

Dr. Alexander Morison, of Upper Berkeley-street, London, has received official sanction for the assumption of the surname of Blackhall before his paternal surname of Morison.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

The Irish Public Health Council.

THE personnel of the Irish Public Health Council was announced last week in these columns. Its duties under the Ministry of Health Act are "to give advice and assistance, and to make proposals to the Chief Secretary in connexion with his powers and duties under this Act." Your readers ought to know that the constitution of the Council is giving rise to severe criticism in Ireland on several grounds. Out of 17 members constituting this Health Council, five, so far, belong to the medical profession. The nominees of the Irish Insurance Commissioners (to be three in number) and of the Local Government Board for Ireland (also to be three) have not yet been made public, beyond the official chairman of each of these bodies. But it is probable that at least one of each group will be a doctor, and we may take it provisionally that six out of the 17 members of the Irish Public Health Council will be medical men, of whom at least three will be permanent officials not now in actual practice. This conclave is to suggest to the Minister of Health in Ireland (the Chief Secretary) some plan for improving the public health of the country, and yet of 17 members there will be apparently only six doctors, three of whom are not in active practice and not one of whom has been elected by the whole body of the medical profession.

Every one of the medical members of this Irish Health Council is a Dublin resident. Considering the five towns in Ireland of over 30,000 inhabitants, Dublin, with a population of 290,638, has 445 doctors; Belfast, with a population of 349,180, has 325 doctors; Cork, with 76,122 inhabitants, has 140 doctors; Londonderry, with a population of 39,892, has 32 doctors; and Limerick, with 38,151 inhabitants, has 39 doctors. Why should one Irish city, which, albeit the capital, comes second in population, have all the medical representation on a Public Health Council for the whole of Ireland? Not only the other large towns but the countryside is ignored. Ireland, as compared with England, is largely rural, and a total of 2398 doctors are absolutely unrepresented medically on this advisory Irish Public Health Council. The Poor-law medical officers of Ireland, with their wretched pay, hard work, and uncertain position—quite different from the Dublin permanent officials—have not a single medical representative on this Council, yet who know so well as they what an inadequate and antiquated public health service there is in Ireland? Irish doctors, who want the public health of the country improved, are asking how could six doctors, three not in practice and all residing in Dublin, tender advice—based on personal practical experience—in reference to the problems of the great rural districts of the centre and south of Ireland, of the "congested areas" of the west (somewhat analogous to the sparsely populated parts of the highlands and islands of Scotland, and of parts of Wales), and of the industrial public health difficulties of the north of Ireland?

Londonderry Water Queues.

The supply of water to Derry is daily growing less. The reservoirs on Sept. 18th had only 30 million gallons of water; one portion of the city is actually dependent on a pump, which may break down at any moment. In other parts there is a reduced supply given only twice a week, and the inhabitants there have to rely on a spring at the asylum in Strand-road, where in the 1911 water famine a pump was erected, and to this pump, an oasis in the desert, the travelling caravan of thousands of men, women, and children daily flock for water, which they carry off in every kind of vessel, from tins to whisky kegs, kettles to barrels. The corporation, in their efforts to keep some regulation of the "dry" crowd, have posted up the following notice: "Take your place in the line and wait your turn." There is a crowd both by day and night, and carts and lorries are being utilised to carry supplies. As for Belfast, there is still considerable shortage in the store of water, the total amount in the reservoirs being 1133 million gallons, as against 1609 million gallons in the same week of September, 1918. Until the water authorities in towns learn and act upon the principle that it is for *dry* and not

wet seasons they must prepare, such famines as at present prevail in the water-supply of their areas will every now and again occur.

Scarlet Fever Outbreak in Belfast.

There has been in Belfast a very widespread epidemic of scarlet fever since the beginning of the present month, so that now Purdysburn Fever (Memorial) Hospital is full up (300 cases), and there are close on 100 cases more in the Union Fever Hospital. The patients are from all parts of the city and from all grades of society. There are 17 cases of scarlatina in Coleraine in the fever hospital, and the outbreak is prevalent in Kilrea, co. Derry.

Sept. 22nd.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Increase of Rabies in France.

CASES of rabies are becoming more and more numerous in France because of the large numbers of stray dogs in the districts laid waste by the enemy. Many warnings recommending the provision of muzzles for dogs and their restraint on a leash have been issued. These suggestions, however, have not been generally adopted. Dr. Roux, director of the Pasteur Institute, at the last session of the Council of Hygiene and Health of the Seine Department, submitted to the Prefecture of Police an urgent note pointing out the gravity of the danger. He recommends that all people bitten by any sort of dog should come immediately to the Pasteur Institute. The few failures of antirabic treatment are due only to delay in treatment. Rules as to stray dogs and wearing of muzzles should also be enforced with vigour. If the public were not so sentimental about dogs, he says, and if the law were administered more strictly, rabies would have disappeared from France by now as it did practically before the war. M. Roux quoted the example of England, where rabies was unknown, thanks to strict rules, until the day when dogs were smuggled in by air.

A New Chair in the Faculty of Medicine of Paris.

A Chair of Laryngology has just been created in the University of Paris. Hitherto the only professor of this subject in France has been Professor Moure, of Bordeaux; elsewhere the teaching of laryngology has been undertaken by assistants appointed by the professor of general medicine in the practical clinics. The new professor is Dr. Sebileau, supernumerary professor, member of the Academy of Medicine, and surgeon of the Lariboisière Hospital, where he conducts a large department of laryngology.

The Raising of the Official Tariff for Doctors' and Chemists' Fees for Industrial Accidents.

The general rise in the cost of living and of all salaries has necessarily led doctors to raise their fees, but not in proportion to the increase in prosperity of workmen, manufacturers, and business men, because medical men cannot form a professional union, nor can they refuse to attend patients when humanity calls. The public would not extend to them the tolerance allowed to strikers who stop traffic—trams, trains, or taxis—or cut off the supply of water, gas, or electricity. Moreover, in certain cases medical men are bound by a contract accepted before the war. In this category comes medical attention given to workmen's injuries, to old people, and to the poor—under the law relating to gratuitous medical aid. The charges are regulated according to an old tariff, which is not remunerative because it is calculated by the State in accordance with the insurance companies, whose terms are somewhat lacking in generosity. This old tariff, which provided a fixed sum for each category of accidents and for every sort of medical aid, has obviously become too low for present conditions of life. It has become even more unjust, inasmuch as the companies have raised their insurance rates considerably. The difference is thus entirely in their favour. The Union of Medical Councils in France have undertaken a vigorous campaign to raise the medical fees in this tariff, and has succeeded in convincing the Parliamentary commission charged with the reconsideration thereof. Henceforward all fees are to be doubled. The new tariff comes into force as from April 1st, 1919, except for bills actually paid before the law was passed (July 30th). There is thus no means of raising the prices on their bills, if they apply to accidents sustained before April 1st next. On the other hand, the tariff is provisional, and is only valid until Jan. 1st, 1920, after which it will be subject to quarterly revision if one of the parties—the State or the Medical Councils—demands a further modification. Thus the result obtained by the Union of Medical Councils is quite important, although still insufficient, in the opinion of many doctors, as workpeople's wages are not double but three or four times what they were, and the insurance companies have raised the rates in exact proportion to the increase in salary.

Sept. 29th.

AUSTRALIA.

(FROM OUR OWN CORRESPONDENT.)

The Influenza.

THE influenza epidemic still continues to show little alteration in Victoria. A recrudescence has been noticeable since the very cold weather began, early in June, and there are still upwards of 1200 to 1500 cases as a daily hospital average in the metropolis, and an unknown, but very large, number of cases elsewhere. On the whole the case-mortality appears to be somewhat small, but there are from 10 to 12 deaths daily in Melbourne. In Sydney there was a very severe outbreak during June and the early part of July, and the mortality assumed serious proportions during one or two weeks. The banks were so short-staffed that they only opened for two hours daily. With a warm spell in the middle of July the spread rapidly subsided, and at present is well within the capacity of the existing provision. In Perth there have been a few cases, but the disease has not assumed alarming features. All inter-State quarantine has been abandoned except by Tasmania, but as there is no communication between it and the mainland, owing to the shipping strike, this is no inconvenience. The Commonwealth Quarantine Department has announced the issue of a serum for the treatment of the affection, but the general attitude is apathetic towards such methods after the failure of vaccine inoculation which may now be taken as established, at all events, for those vaccines which were employed.

Medical War Relief Fund.

A movement has been set on foot by the Federal Medical Committee and the New South Wales Branch of the British Medical Association to establish a fund to be applied to medical men, or their dependents, who have suffered financial reverse while on active service. Clauses 4 and 5 of a draft agreement which has been adopted by all the State branches provide that the fund "shall be used in assisting medical officers who have been disabled and the dependents of those who have died; and that the fund shall also be used to issue loans, with or without interest, to medical men who, on account of war service, may require temporary financial assistance." It is proposed to raise the sum of £50,000, if possible, by voluntary contribution. The weak spot in the proposal is that apparently no attempt has been made to ascertain the probable demand that may be made, which could have been approximately arrived at without much difficulty, as the proposal has only been shaped since the armistice and practically all the medical officers are traceable.

Returned Medical Officers.

The medical officers who went from Victoria on overseas service have formed a society for the promotion of the interests of its members. They approached the Premier with a request that their secretary should be supplied in advance with particulars of proposed Government medical appointments, and that all such appointments made during the war should be reviewed with the prospect of giving them to returned men. The Premier saw no difficulty in the first request, and promised to think over the other.

Munificent Bequests.

Sir Samuel McCaughey, who recently died in New South Wales, was a pioneer of the pastoral industries in Australia, and acquired a large fortune. By his will the cause of medical education should benefit, for the Sydney University receives a sum of £400,000, while the Brisbane University benefits to the extent of £250,000. The late Sir Samuel McCaughey was a bachelor.

Personal.

Mr. G. A. Syme, F.R.C.S. Eng., having reached the retiring age, has relinquished his position as surgeon to the Melbourne Hospital and received a special acknowledgment from the committee of his long and faithful service. Mr. Syme volunteered for overseas war duty, and worked on a hospital ship during the Anzac landing, but contracted a poisoned hand, and after a dangerous illness was compelled to proceed to England, where he acted as consulting surgeon to the Australian medical establishment. Mr. Syme is succeeded by Mr. B. T. Zwar, who also was on active service with the Australian forces.

Lieutenant-Colonel N. F. Fairley has been appointed assistant director of the Eliza Hall Research Laboratory at the Melbourne Hospital. He is a Melbourne graduate, and has done interesting work on cerebro-spinal fever and on bilharziasis.

August 5th.

TUBERCULOSIS.

The Welsh National Memorial.

ACCORDING to the report of the King Edward VII. Welsh National Memorial Association, which was presented at the seventh annual meeting on July 26th, the work of the association has gone successfully forward in spite of the war. At the end of July, 1914, the association possessed 87 hospital beds. The number of sanatorium beds belonging to the association in this year was 148. By 1919 the number of hospital beds had risen to 473, and that of sanatorium beds to 594. In the year ending March 31st, 1914, the patients examined numbered 8763. In the year ending March 31st, 1919, they numbered 12,260. During the war, up to this date, no less than 11,402 had received treatment in hospitals, and 6373 in sanatoriums. More than 50,000 patients were examined at dispensaries and visiting stations by tuberculosis physicians. Since 1915 there had been no delay in making provision for discharged Service men suffering from tuberculosis; more than 2500 passed through the hands of the association's medical staff, and more than 1600 received treatment in hospitals and sanatoriums. As many as 350 patients took their discharge against medical advice, and 53 were discharged for breaches of discipline. The two large sanatoriums, Talgarth and Llangwyfan, have been almost completed, and the work of the building committees has come to an end. The medical policy of the association is discussed in a special section of the report, and many recommendations are made as to the organisation of the campaign against tuberculosis. This section deals with principles and ideals rather than with actual achievements. In presenting the report the president, Major David Davies, said that it had been decided that the appointment of chief medical officer to the association, in succession to Dr. Marcus Paterson, who resigned two years ago, had been held in abeyance during the war on account of the difficulty of securing the best man. He added that the suggestion had been made that a chair of Tuberculosis should be established in the Medical School of Wales, and that the professor of tuberculosis should become the chief medical officer of the association. In this way the close coöperation of the school and the association would be secured, and the information gathered by the association would be at the disposal of the hundreds of medical students passing through the medical school.

Sanatorium Reports.

The thirty-fourth annual medical report of the *Trudeau Sanatorium*, published by itself, not with the general report already reviewed in THE LANCET for July 26th, consists largely of reprints of articles published by members of the Trudeau School in the *American Review of Tuberculosis*. It contains, however, a previously unpublished account of investigations made into the subsequent fate of patients who had been discharged from the sanatorium 20 years or more earlier. Of the 814 patients traced, 148, or 18·2 per cent., were alive; 666, or 81·8 per cent., were dead. An attempt is also made to show how the severity and extent of the disease at the time of treatment affects the ultimate fate of the patient.

The report of the *Vejlefjord Sanatorium* for 1918 includes a paper by its medical superintendent, Professor Saugman, on thoracoplasty. This operation, he has found, greatly improves the prognosis for patients in the later stages of pulmonary tuberculosis, the results of treatment for these patients being far better than in earlier years when compression therapy was not practised. The majority (64·9 per cent.) of all the patients were in the third stage, and only 10·5 per cent. were in the first stage of the disease. The proportion of patients discharged fit for work was 49·7 per cent., as compared with 44·7 per cent. representing the average for the years 1900–1918. This improvement was chiefly due to the better results among the patients in the third stage, as great a proportion as 33·3 per cent. being discharged fit for work instead of 25·4 per cent. in earlier years. Of the patients in the third stage 45 underwent treatment by artificial pneumothorax (11 failures on account of pleural adhesions) and 16 underwent thoracoplastic operations. The results in some of these cases were strikingly successful.

The American Review of Tuberculosis.

The May number begins with a paper by Dr. Paul A. Lewis on the Complement-fixation Test in Tuberculosis. He finds that the numerical relations are such as to make it unsafe to apply this test to the diagnosis of tuberculosis except as a matter of the most limited confirmatory interest. In a paper on the Influence of Protein Intoxication on Tuberculosis in Guinea-pigs Dr. Allen K. Krause and Dr. H. S. Willis show that repeated daily injections of (homologous) tuberculo-protein and (heterologous) egg albumin, before experimental infection with tubercle bacilli, probably render guinea-pigs less resistant to tuberculous infection. Dr. A. L. Bloomfield and Dr. J. G. Mateer give an account of cutaneous tuberculin tests carried out in 19 consecutive cases of influenza. They found that during the febrile stage of the influenza the skin sensitiveness to tuberculin was absent in every case but one. During convalescence reactivity returned to 89·4 per cent., which corresponds with the proportion of positive reactions among otherwise healthy individuals. The authors note that, in its influence on the cutaneous tuberculin test, influenza bears a striking resemblance to measles. In a paper on the Pneumothorax Treatment of Acute Lung Abscess Dr. B. Goldberg and Dr. M. Biesenthal publish three cases successfully treated. Their analysis of 16 cases thus treated, including their three cases, shows that recovery was effected in 75 per cent., improvement in 12 per cent., while two patients (12 per cent.) were dead. Their comparison of this operation with other methods suggests that artificial pneumothorax is the best procedure. A somewhat discursive paper on the Treatment of Tuberculous Cervical Adenitis, by Dr. W. R. Abbott, is a plea for tuberculin treatment.

URBAN VITAL STATISTICS.

(Week ended Sept. 20th, 1919.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at 16,500,000 persons, the annual rate of mortality, which had been 10·0, 10·7, and 10·4 in the three preceding weeks, rose to 10·9 per 1000. In London, with a population slightly exceeding 4,000,000 persons, the annual death-rate was 11·4, or 0·5 per 1000 above that recorded in the previous week, while among the remaining towns the rates ranged from 1·8 in Enfield, 4·9 in Oxford, and 5·7 in Northampton, to 18·4 in Middlesbrough, 19·0 in Tynemouth, and 20·6 in Great Yarmouth. The principal epidemic diseases caused 434 deaths, which corresponded to a rate of 1·4 per 1000, and included 322 from infantile diarrhœa, 38 from diphtheria, 31 from whooping-cough, 25 from measles, 14 from scarlet fever, and 4 from enteric fever. Measles caused a death-rate of 3·6 per 1000 in Tynemouth. The 322 deaths from infantile diarrhœa were 81 in excess of the number in the previous week, and included 103 in London, 25 in Liverpool, 12 each in West Ham and Middlesbrough, 11 in Birmingham, and 9 in South Shields. There were 1524 cases of scarlet fever and 1118 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, against 1504 and 1057 respectively at the end of the previous week. The causes of 26 deaths in the 96 towns were uncertified, of which 3 were registered in Birmingham and 3 in Liverpool.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality, which had been 10·9, 10·8, and 10·2 in the three preceding weeks, rose to 10·5 per 1000. The 224 deaths in Glasgow corresponded to an annual rate of 10·4 per 1000, and included 15 from infantile diarrhœa, 3 from diphtheria, 2 from whooping-cough, and 1 each from enteric fever, measles, and scarlet fever. The 66 deaths in Edinburgh were equal to an annual rate of 10·2 per 1000, and included 2 from infantile diarrhœa, and 1 each from scarlet fever and whooping-cough.

Irish Towns.—The 97 deaths in Dublin corresponded to an annual rate of 12·5, or 4·8 per 1000 below that recorded in the previous week, and included 9 from infantile diarrhœa, and 1 each from enteric fever, scarlet fever, and diphtheria. The 111 deaths in Belfast were equal to a rate of 14·4 per 1000, and included 8 from infantile diarrhœa, 6 from scarlet fever, and 1 from diphtheria.

CONTROL OF VENEREAL DISEASES.

Prophylaxis against Venereal Disease.

IN January last an Inter-Departmental Committee was appointed by Dr. Addison to consider the risks of demobilisation to the health of the civilian population of the country and the measures to avoid them. A Note (Cmd. 322. H.M. Stationery Office. Price 3*d.*) has now been presented to the Minister of Health reporting on one small part of the venereal problem—namely, the advisability of encouraging the sale of "packets"—i.e., the provision before exposure to infection of means of prophylaxis for use either before or after exposure. The Committee heard the experience of distinguished medical representatives of various sections of troops—namely: for Canada, Colonel J. G. Adami and Colonel J. A. Amyot; for Australia, Lieutenant-Colonel G. Raffan and Sir James Barrett; for New Zealand, Major J. Falconer Brown; for the United States, Colonel A. M. Whaley, Colonel H. Young, and Colonel W. T. Snow; for the B.E.F., Major C. T. White. In addition evidence was given by Lady Barrett, Sir Bertrand Dawson, Sir H. Bryan Donkin, Sir William Osler, Dr. Morna Rawlins, Sir G. Archdall Reid, and Dr. Agnes Savill. Memoranda submitted by these experts are given in the appendix to the Note, while in the text are set out the figures of incidence of venereal disease among the different troops. The general conclusion reached by the Committee is short and crisp:—The official application of a packet system to the civil community is neither desirable nor practicable. Paragraph 8 of the Note, which is the chief justification of this conclusion, runs:—

"..... while certain drugs and preparations may be relied upon to remove or destroy the infection of venereal disease if applied by skilled attendants very shortly after exposure, such satisfactory results cannot be secured if those drugs and preparations are used unskilfully or too long a time after exposure. ..... experience indicates that, however careful the instruction, and however scientifically effective the prophylactic in itself might be if used under proper conditions, it frequently fails to protect when applied by the individual, even when this self-application is supported later by additional skilled treatment. The consumption of alcoholic liquors, carelessness, natural excitement, forgetfulness, or ignorance has been the cause of numerous failures, even amongst those troops where the use of such prophylactic measures has been most efficiently organised and taught."

The Committee, it is added, set out to examine the evidence placed before them from the scientific and the medical point of view, and it is strictly in this spirit that they desire to record it as their opinion that the irreplaceable effect of the moral factor has been too frequently neglected or forgotten.

The Note is of value if only for the definition of certain terms adopted ("for the purpose of the Committee") to avoid ambiguity.

Prophylactic treatment to connote the issue of drugs and appliances made available before exposure to infection, for use by the individual.

Early preventive treatment to connote treatment applied immediately after exposure to infection.

Abortive treatment to connote treatment applied immediately on the appearance of symptoms with a view to cutting short the duration of the disease.

The adoption of this nomenclature will clarify future discussion of the subject.

Legislation against Venereal Disease in Sweden.

We published in 1915 and 1916 a series of annotations dealing with reforms which were then being advocated in connexion with venereal disease in Sweden. Some of these have now materialised, and in the Swedish journal, *Dagens Nyheter*, Bureauchef Sigurd Ribbing has given an account of the new law dealing with venereal disease which came into force on Jan. 1st of this year. The system of registration and regulation of prostitutes is definitely abolished, and principles are adopted corresponding more closely with modern western sociological views. Every patient suffering from venereal disease is now entitled to free medical treatment, including drugs and, when necessary, free hospital treatment. The special wards hitherto set apart for venereal disease are abolished, so that no invidious distinction is made between venereal and other diseases. Provision is made in the large towns for polyclinics, each town of over 20,000 inhabitants being obliged to provide adequate polyclinical accommodation. To help towns to meet this obligation, the State undertakes to defray the cost of doctors, drugs, and other medical requirements, while the cost of premises, of fuel, lighting, nursing, &c, must be borne by the local authorities. In return for its substantial subsidy the State looks to the local authorities to provide good accommodation and to keep up the standard of efficiency, so as to meet modern requirements. In districts where the establishment of polyclinics is not feasible, free medical treatment is undertaken by the local medical authorities, represented by the State medical practitioners or medical officers of health. It is admitted that these medical officers do not invariably possess the skill and experience of a specialist in venereal diseases, but in thinly populated districts there has been no satisfactory alternative, and several medical officers of health, recognising their limitations, have already brought their knowledge of venereal diseases up to date by getting into touch with special hospitals for these diseases. It is also anticipated that in the near future special post-graduate courses in venereal diseases will be provided in conjunction with grants of money to practitioners attending such courses.

The new law makes it compulsory for every patient suffering from venereal disease to submit to medical treatment as long as the disease is in an infectious stage. If the medical officer's instructions regarding treatment and prevention of infection are not followed out, the patient is liable to compulsory treatment in a public hospital and to detention there until the infectious stage of the disease is passed. Any man or woman who suffers from venereal disease and who exposes others to this infection is liable to imprisonment and hard labour. And it is the duty of the authorities to prosecute without the instigation of anyone who has been exposed to infection by the accused. New powers are also given the police for dealing with brothels masquerading as hotels.

The promoters of this new law do not flatter themselves that they have even approximately solved the problems of prostitution and venereal diseases by putting the above reforms on the Statute books. Indeed, they regard these reforms merely as one step to an end that can be attained only by the greatest vigilance and by untiring supervision of the working of the innovation. It is also admitted that prostitution is an expression of certain social economic factors which are hardly touched by the new law. The war has undoubtedly swelled the ranks of the prostitute to an enormous extent by inducing poverty on the one side, opulence on the other. And, above all, the housing problem is responsible for the conditions which foster prostitution. By more efficient inspection of houses throughout the country, and by local authorities undertaking the provision of new houses, it is hoped that a partial solution, at any rate, of this problem may be found; and in the meantime it is considered urgently necessary by Hr. Ribbing and his colleagues that the present legislation dealing with child welfare should be extended so as to give the authorities certain powers over young adults of 15 to 18. Compulsory education and detention of the incipient prostitute of this age would, it is urged, do much to convert the potential vagabond to an industrious and virtuous worker.

Travelling Consultants for Venereal Clinics.

Referring to a proposal made in this column on Sept. 6th (p. 451) to appoint travelling consultants for venereal clinics, "Fair Play" writes:—

"Your suggestion is excellent, but I should like to add that it does not go far enough, and that what is wanted is a complete overhaul of the present personnel. The majority of these clinics were started during the war, and appointments of medical officers were made from those available at the time. In some cases these appointments have been dealt with in the spirit of a closed corporation, and are reserved for members of the hospital concerned, irrespective of their knowledge of venereal disease. There are now many medical men demobilised who have had experience in Military V.D. Hospitals, to say nothing of pre-war experience, and who have returned to find the doors to these new appointments bolted and barred. As the Ministry of Health is spending public money on these clinics, it is 'up to' the Ministry to see that the money is spent to the best advantage, and that these appointments are made by a system of open competition. I have recently been consulted by a patient who has been woefully mistreated at one of these new clinics, owing apparently to ignorance on the part of the medical staff."

Correspondence.

"Audi alteram partem."

CONTROL OF VENEREAL DISEASE.

To the Editor of THE LANCET.

SIR,—The letter in your last issue under this title from Sir Bryan Donkin with regard to the deputation from the National Council for Combating Venereal Diseases to the Public Health Committee of the London County Council, hardly does justice either to the London County Council or the National Council. The London County Council has no "policy of passivity." I know that it is prepared to go as far as it possibly can in providing facilities for treatment of venereal disease; but it declines to assist in establishing centres for "early preventive treatment," holding that the establishment and public advertisement of such centres would be a direct incitement to vice. Administrative and financial difficulties also influenced it.

It is obvious from its answer to the deputation that the County Council did not then realise that the main request of the National Council was for greatly increased facilities for effectual and continuous treatment, and that the "preventive" side was an adjunct.

The policy of the National Council for Combating Venereal Diseases is simple—"Personal cleanliness directly after risk of infection, and prompt resort to a medical man." No question of "6 hours" arises with regard to it.

I am Sir, yours faithfully,

E. B. TURNER, F.R.C.S.,
Chairman of the Medical Committee, N.C.C.V.D.

81, Avenue Chambers, Southampton-row, London, W.C.1.,
Sept. 24th, 1919.

THE BRITISH FEDERATION OF MEDICAL AND ALLIED SOCIETIES.

To the Editor of THE LANCET.

SIR,—In your issue for Sept. 20th appears an attempt made by the officers of this body to reply to a corrected proof of my letter to you of Sept. 6th, headed "The Cult of Individualism," the receipt of which you acknowledge in your issue for Sept. 13th, but which, however, you have not seen your way to publish.

As you have deprived your readers of the benefit of seeing this letter and thus of forming an unbiased opinion with regard to the many points at issue, it is quite impossible to deal satisfactorily with the question when treated with such want of fair play. Your heading to the Correspondence column—"Audi alteram partem" would seem to support this contention. I am, Sir, yours faithfully,

Hove, Sept. 19th, 1919. E. ROWLAND FOTHERGILL.

*** Before we were able to publish Major Fothergill's letter—and the delay was entirely due to his own wish—it appeared in the *British Medical Journal*. As the exact reference to this publication was given by Sir Malcolm Morris and his co-signatories, there could be no conceivable reason for using space in reprinting the letter. Major Fothergill knows perfectly well why his letter was not printed, so that his accusation of unfairness on our part is not a candid one.—ED. L.

POST OFFICE CONTRACT PRACTICE.

To the Editor of THE LANCET.

SIR,—The principle of contract practice is that small annual payments should be made regularly by a number of patients during periods of health, the amount being calculated to cover the expense of attendance on those patients who incur illness. In the case of the Post Office, whose medical officers are paid on this system, the principle has, in my opinion, been entirely lost sight of and destroyed.

Early in the war when postal employees joined the Army, the Post Office medical officers were notified that each man's name, as he joined, would be removed for the time being from the doctor's capitation list, but that when the man returned, even if invalided, he would then be restored to the list. I protested vigorously at the time, pointing out that if the men were to be restored to the list, whatever their state of health, on returning from military service, their capitation fee should continue to be paid during the interval of absence, especially as military service was likely to injure health in many ways. My protest was, of course, useless. Names were removed regularly from my list, with the result that my salary declined as follows: 1915, £16 16*s.* 9*d.*; 1916, £10 19*s.* 1½*d.*; 1917, £9 17*s.* 5*d.*; 1918, £9 0*s* 9*d.*; and doubtless every other Post Office medical officer has experienced a like decline of salary.

The men are now returning, and I have just received a letter from the surveyor of the district apprising me of the restoration to my capitation list of a man invalided from the Army after months of illness from Mesopotamian malaria and who is only a fortnight out of hospital in England. His spleen is still palpable and he cannot walk a mile without breathlessness. He is now restored to my list for treatment at the rate of 8*s.* 4*d.* a year, although I have not received a penny for him for the last three or four years.

If these returning men are to be attended by us as before I maintain that at the very least their capitation fees for the period of their absence in the Army should be paid to us, and I have replied to this effect to the surveyor.

I am, Sir, yours faithfully,

Bromsgrove. H. CAMERON KIDD.

THE IRISH PUBLIC HEALTH COUNCIL.

To the Editor of THE LANCET.

SIR,—You announced last week in THE LANCET the names of the Irish Public Health Council, but without comment on them.

This Irish Public Health Council, whose duty is to advise the Chief Secretary, as Health Minister, as to what changes Ireland needs from a public health point of view, was indeed wrongly constituted at the outset. It is believed in Ireland that the situation has been largely due to the advice of the Irish Branch of the General Medical Council, where of seven members only one is elected by the whole profession. The Irish medical profession was never consulted as to the Public Health Council, on whom, however, the burden will fall of attempting to carry out any new health scheme. The Chief Secretary was early advised that the new Council was going to be wrongly constituted, that the medical members were too few in number, and that the profession as a whole should help in the selection of their own representatives. He knew our views even before the Bill went to the House of Lords, but he allowed himself to be guided by his permanent officials in Dublin. As a result he has—and it is his first attempt at a constructive measure in Ireland—as a Council to advise him as to the future public health measures necessary for the whole of Ireland, a body of 17 members, which has a medical representation which is too small and which is unrepresentative in knowledge of the general practice of this country, being wholly comprised of Dublin persons.

I am, Sir, yours faithfully,

Sept. 20th, 1919. IRISH MEDICAL PRACTITIONER.

*** One of our Irish Correspondents deals with the matter this week.—ED. L.

DEATH OF SIR PETER WYATT SQUIRE.—The death of Sir Peter Wyatt Squire, which took place suddenly on Sept. 17th, removes a prominent and distinguished figure from the pharmaceutical world. His services to pharmacy, and to the Royal Household in his official capacity of pharmacist, were recognised by the King a little over a year ago, when His Majesty conferred upon him the honour of knighthood. His name will always be associated with "Squire's Companion to the Pharmacopœia," a valuable compilation initiated by his father, the late Peter Squire, who was President of the Pharmaceutical Society, 1861-63. Peter Squire's work laid the foundations of the British Pharmacopœia. Sir Peter Wyatt Squire devoted much time and attention to keeping the "Companion" up to date, and carried out considerable experimental work directed to verifying and revising the official tests. He did also some original work on methods of preparing tissues for microscopic work. His advice on pharmaceutical preparations and compounding was eagerly sought by the medical profession, and his prescience in regard to approved and valuable formulæ is well known.

Obituary.

WILFRID OMBLER MEEK, M.B., B.S. LOND.,

MEDICAL SUPERINTENDENT OF BROMPTON HOSPITAL SANATORIUM, FRIMLEY.

Dr. W. O Meek, whose joint contribution with Dr. J. J. Perkins and Dr. R. A. Young appears in our present issue, died in his sleep on Sept. 14th at the sanatorium which he so ably superintended. He received his medical education at St. Thomas's Hospital, London, where he held a Louis Jenner research scholarship, and after graduating in medicine at London University in 1905 he was first house physician and then assistant director of the clinical and pathological laboratories. A house appointment at the Brompton Hospital for Consumption turned his interests in that direction, and when Dr. Marcus Paterson left Frimley Sanatorium to direct the Welsh National Memorial it naturally fell on Dr. Meek to succeed him in the important post at Frimley. Of his work there a friend (J. J. P.), who was staying with him at the time of his death, writes :—

As the superintendent of a sanatorium for tuberculosis Meek was ideal, and if ever a man found his proper work in life it was he. He seemed to have all the gifts necessary for success in such a post and all departments of his work appealed to him equally. Nature and training had combined to fit him in this peculiar degree. His love of outdoor life and outdoor things gave him the interest in and grasp of the management of the estate and the patients' work which was so noticeable and made this side of his life an unfailing delight to him.

As a physician he started with a sound training in clinical work gained in resident posts to which his years as assistant in the clinical laboratory at St. Thomas's Hospital added a thorough insight into modern pathology and modern methods of research and their application to the problems of tuberculosis. In this he had the advantage over the ordinary physician. The writer has often admired the happy suggestions and explanations his scientific knowledge enabled him to give of puzzling clinical symptoms. Even after he went to Frimley, side by side with his administrative duties, he continued his research work, and in addition to what has been published he has left a large mass of valuable experimental results on which he was still at work.

Based on this thorough grasp of the pathology of tuberculosis, he had an equally thorough grasp of the principles of treatment, on which he held strong views. One can sum up his treatment by saying he was patient and wonderfully persistent and, it is not too much to say, profound. Add to these qualities a marked capacity for organisation and a firm, though sympathetic, character, and one need look no further for the secret of the respect and affection he won from all and of the contented, cheerful, though active, atmosphere one felt throughout the institution. Everything went like clockwork and went well.

It is almost unnecessary to add that he was quite unconscious of his many gifts, and day by day seemed just intent on the day's work being well done. Towards his friends he was thoughtful kindness itself and a very genial, hospitable companion. As one went about with him one realised after a time that he had a deep sense of sympathy with the patients, which made him leave nothing untried for their benefit. He was slow to give up hope for them, and everyone had a good chance to improve. He knew every case thoroughly, the details of their lives and work as well as of their illness.

In late years he had become much impressed with the necessity of making in many instances some alteration in their after-life at home to enable them to maintain their health. He gave a good deal of attention to this side of his work, with excellent results, entering into each case individually and giving really practical advice and help. It was from this point of view that he threw himself enthusiastically into the farm colony scheme of the National Association for the Prevention of Tuberculosis and gave almost daily supervision to the preparations for the colony which lies almost close to the Frimley Sanatorium. He had very large ideas and plans as to the instruction which could be given there. His death is a severe blow to every phase of tuberculosis work.

Dr. Meek's critical attitude of mind was well shown in his contribution to a discussion at the Medical Society of London on the Value and Limitations of Sanatorium Treatment as regards the Working Classes, a report of which appeared in THE LANCET of Nov. 24th, 1917. He carried out the principles of sanatorium treatment rationally and scientifically, adapting them to the new developments of the times. It was his happy lot to find himself able to modify the prognosis in the case of his more resourceful and intelligent patients by attention to after-care. And where he showed the way others may follow.

Medical News.

THE OPENING OF THE MEDICAL SCHOOLS.—At the opening of the October Session in the Metropolitan Medical Schools the following arrangements have been made :—

St. Bartholomew's Hospital.—The annual dinner will be held on Sept. 30th, at 7 for 7.30 P.M., at Princes Restaurant, Dr. W. S. A. Griffith presiding.

Charing Cross Hospital.—The annual Students' Dinner will be held at the Adelaide Gallery, Strand, on Oct. 1st, at 7.30 P.M., Colonel William Hunter presiding. The prizes will be distributed at the hospital on the same date by Sir Auckland Geddes, President of the Board of Trade.

St. George's Hospital.—The opening address will be delivered by Dr. Squire Sprigge, at 3 P.M., on Oct. 1st. The annual dinner will take place at Princes Restaurant, Piccadilly, on the same day, at 6.30 for 7 P.M., when the chair will be taken by Dr. J. H. P. Fraser, D.S.O., M.C.

Guy's Hospital.—The biennial dinner will take place at the Connaught Rooms, at 7 P.M., on Oct. 28th, Dr. Lauriston Shaw in the chair.

King's College Hospital.—The introductory address will be given by Dr. T. J. Macnamara, LL.D., on Oct. 1st, at 3 P.M. The annual dinner will be held on the same day at 7 P.M., at Pagani's Restaurant, Sir StClair Thomson presiding.

London Hospital.—Sir Bertrand Dawson will preside at the dinner of the Old Students, which will be held at Princes Restaurant on Oct. 2nd, at 7.30 for 8 P.M.

St. Mary's Hospital.—The prizes will be distributed on Oct. 1st, at 3 o'clock, by Lieutenant-General Sir John Goodwin, Director-General of the Army Medical Service. The annual dinner of Past and Present Students will be held on the same evening at the Connaught Rooms, Sir Almroth Wright in the chair.

Middlesex Hospital.—The introductory address will be delivered by Sir John Bland-Sutton, at 3 P.M., on Oct. 1st, and Surgeon Rear-Admiral Sir Robert Hill will distribute the prizes. The Annual Dinner will be held on Oct. 1st, at 6.30 for 7 o'clock, at the Holborn Restaurant, and the Earl of Athlone, chairman of the Hospital, will preside.

St. Thomas's Hospital.—The Old Students' Dinner will be held on Oct. 1st, at 7.30 P.M., in the Connaught Rooms, Great Queen-street, London, Sir George Makins, P.R.C.S., presiding.

University College Hospital.—The annual dinner of Old Students will be held at the Imperial Restaurant, Regent-street, on Oct. 3rd, at 7 for 7.30 P.M. Sir John Rose Bradford in the chair.

Westminster Hospital.—The annual dinner will be held on Oct. 2nd at the Imperial (Oddenino's) Restaurant, at 7 for 7.30 P.M. Mr. Walter George Spencer in the chair.

London School of Medicine for Women.—The introductory address will be given by Dr. Christopher Addison, Minister of Health, at 3 P.M., on Oct. 1st.

THE GRESHAM LECTURES.—On Oct. 14th, 15th, 16th, and 17th, at 6 P.M., Sir Robert Armstrong-Jones will deliver four lectures at Gresham College, Basinghall-street, London, E.C., on the Evolution of Military Medicine and Surgery from Ancient Times and the Medical Lessons Derived from the Great War. The lectures will be free to the public.

THE INCORPORATED SOCIETY OF TRAINED MASSEUSES.—The members' conference takes place in London from Oct. 2nd-4th. On Thursday, Oct. 2nd, at 11 A.M., Captain F. Wood Jones, R.A.M.C., lectures on "What We Know of Ourselves," at the Royal Society of Arts, 18, John-street, London, W.C.; at 2.30 P.M., Major R. C. Elmslie, R.A.M.C., deals with "Deformities of the Spine," at St. Bartholomew's Hospital, after which members are free to visit various departments of the hospital. On Friday, Oct. 3rd, at 11 A.M., Dr. Justina Wilson lectures on "Diseases of the Respiratory Tract," at the Royal Society of Arts; at 2.15 P.M., visits to various departments at St. Thomas's Hospital, by kind permission of the authorities; at 3.15 P.M., a demonstration of gymnastic work will be given by Miss Randell, sister-in-charge of the massage and exercises department of St. Thomas's Hospital; and at 6 P.M., a lecture will be delivered by Colonel A. H. Tubby on "Stiffness of Joints," at the Royal Society of Arts.

THE RÖNTGEN SOCIETY.—The officers and members of council for the ensuing year have been elected as follows:—President: Dr. Sidney Russ. (Past Presidents for last three years: Major C. Thurston Holland, Major G. W. C. Kaye, Dr. G. B. Batten.) Vice-Presidents: Mr. J. Hall Edwards, Professor A. W. Porter, Professor J. W. Nicholson. Honorary Secretaries: Dr. Robert Knox, Dr. R. W. A. Salmond. Honorary Treasurer: Mr. Geoffrey Pearce. Honorary Editor: Major G. W. C. Kaye. Council: Mr. W. E. Schall, Dr. G. H. Rodman, Mr. C. Howard Head, Mr. C. R. C. Lyster, Dr. J. Metcalfe, Dr. E. P. Cumberbatch, Dr. A. E. Barclay, Mr. F. J. Harlow, Dr. W. Makower, Dr. E. A. Owen, Dr. J. Russell Reynolds, Mr. R. S. Wright.

BRITISH ORTHOPÆDIC ASSOCIATION.—The annual meeting will be held at the rooms of the Medical Society of London, 11, Chandos-street, W., on Nov. 14th, when the President, Mr. Muirhead Little, will deliver an address. At 10.30 A.M. there will be a discussion on Kineplastic Amputations, in which Mr. T. H. Openshaw, Mr. S. Alwyn-Smith, Sir J. Lynn-Thomas, and Major M. Fitzmaurice-Kelly will take part, and in the afternoon a discussion on Birth Paralysis will be opened by Mr. H. A. T. Fairbank and Mr. Harry Platt. Mr. A. S. B. Bankart will discuss the Operative Treatment of Spastic Paralyses. The annual dinner will be held during the evening of the same day, and on Nov. 15th hospital demonstrations will be arranged, as well as a visit to the Country Hospital for Cripples at Pinner.

DEATH OF MR. W. M. HOPE.—Mr. William More Hope, M.R.C.S., L.S.A., D.P.H., medical officer of health for the city of Gloucester, was found dead in bed at his residence in Denmark-road last Monday morning. He had not been in good health for some little time, but discharged his official duties up to the last. He was 64 years of age, and took the diplomas of Member of the Royal College of Surgeons and Licentiate of the Society of Apothecaries in 1878, after which he was for over 10 years secretary and house surgeon to the Stamford and Rutland General Infirmary. While there his attention was directed more especially to preventive medicine and public health, and having passed the examinations of the Conjoint Board for the diploma in Public Health he went to Gloucester to practise in April, 1905, and was appointed medical officer of health of the city and port of Gloucester in succession to the late Dr. John Campbell. He was also appointed school medical officer to the city education committee under the medical inspection scheme. Dr. Hope was a bachelor.

SOCIETY FOR THE STUDY OF INEBRIETY.—An autumn conference of the Society for the Study of Inebriety will be held in the rooms of the Medical Society of London, 11, Chandos-street, Cavendish-square, W., on Tuesday, Oct. 14th. The conference is open to all members and associates without fee, who may also introduce visitors on forwarding their names and addresses to the honorary secretary. The proceedings will include a breakfast, which will be held at the Polytechnic, 309, Regent-street, W., at 8.30 A.M., when the chairman of the National Temperance League, Mr. Robert Whyte, jun., will preside, supported by Sir Alfred Pearce Gould, Lord D'Abernon, Sir Thomas Whittaker, M.P., and Dr. Mary Scharlieb. Mr. Theodore Neild, chairman of the League's Science and Education Committee, will present an address. Those desiring to be present should communicate with Mr. John Turner Rae, secretary, at the offices of the League, 34, Paternoster-row, E.C.4. The sessions of the conference will be held in the Hall of the Medical Society of London, 11, Chandos-street, Cavendish-square, W. At the morning session, at 10.30, the President of the Society, Sir Alfred Pearce Gould, will deliver an introductory address, after which Lord D'Abernon will open a discussion on "The Scientific Basis of Drink Control." At the afternoon session, at 2 P.M., Sir Thomas Whittaker will open a discussion on "Alcohol in Relation to Recreation and Refreshment and the Public House." Special papers will be presented and discussed at the morning and afternoon sessions, and among communications promised are the following: "Alcohol and Alcoholism in Relation to Venereal Disease," by Mr. Arthur Evans; "Analytical Psychology in Alcoholism," by Dr. Maurice Nicoll; "Special Clinics for Inebriates," by Dr. J. A. Davidson; "The Influence of Dilution on the Toxic Action of Alcoholic Liquids," by Dr. H. M. Vernon. Tea will be served in the Library to members and associates attending the conference at 4.30 P.M. At 5.30 the eighth Norman Kerr Memorial Lecture will be delivered by Dr. Mary Scharlieb, C.B.E., M.D., M.S., in The Robert Barnes Hall of the House of the Royal Society of Medicine, 1, Wimpole-street, the subject being "The Relation of Alcohol and Alcoholism to Maternity and Child Welfare."

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Rear-Admiral H. W. G. Doyne is placed on the Retired List at own request.

Surg.-Capt. G. A. Dreaper is promoted to Surgeon Rear-Admiral.

ARMY MEDICAL SERVICE.

Col. C. A. Young, C.B., C.M.G., retires on retired pay.

Col. G. T. Rawnsley, C.B., C.M.G., is placed on the Half-pay List under the provisions of Article 351, Royal Warrant, for pay and promotion.

Cols. A. J. Luther, C.B., H. L. Knaggs, C.B., C.M.G., and B. H. Scott, C.M.G., retire on retired pay.

Temp. Col. C. J. Symonds, C.B. (Major, R.A.M.C., T.F.), relinquishes his temporary commission on re-posting.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Col. E. McDonnell relinquishes the temporary rank of Colonel on re-posting.

The undermentioned relinquish the acting rank of Lieutenant-Colonel: Major O. L. Otway, Capt. R. G. S. Gregg, Temp. Capt. G. W. Milne.

Major and Bt. Lieut.-Cols. G. Ormrod and A. W. Samper relinquish the acting rank of Lieutenant-Colonel.

Major H. F. Shea relinquishes the acting rank of Colonel on re-posting.

R. H. Nicholson, Fleet Surgeon, R.N., ret., to be temporary Major.

Capt. J. J. D. Roche relinquishes the acting rank of Lieutenant-Colonel on ceasing to command a Medical Unit.

Major T. B. Moriarty to be acting Lieutenant-Colonel whilst specially employed.

Capts. J. J. Molyneaux and R. G. S. Gregg to be acting Majors whilst specially employed.

The undermentioned relinquish the acting rank of Major: Capts. J. Biggam, A. L. Foster, T. L. Fraser; Temp. Capts. E. McCulloch, A. C. Hancock, J. C. D. Allan, E. S. Sowerby, C. Y. Ford (on ceasing to be specially employed).

Temp. Capt. (acting Major) R. H. Lucas to be Captain, and to retain his acting rank whilst specially employed.

Capt. J. C. Sproule to be acting Major.

The undermentioned temporary Captains to be acting Majors: J. M. Macfie, H. G. Hobson, and J. Graham and E. K. Campbell (whilst specially employed).

Late temporary Captains to be temporary Captains: P. Kitchin, G. L. Neil, R. W. D. Hewson, W. B. Honey, G. B. Proctor.

To be temporary Captains: J. A. Jardine and F. J. R. Cowie.

Officers relinquishing their commissions:—Temporary Lieutenant-Colonels retaining the rank of Lieutenant-Colonel: J. V. G. B. Tighe, W. Harding, M. A. Collins. Temp. Majors H. T. Jenkins, G. D. Gray (granted the rank of Lieutenant-Colonel), R. T. Smith (retains the rank of Major). Temp. Capt. (Bt. Major) W. E. P. Phillips (retains the brevet rank of Major). Temp. Capt. G. Robertson.

Temporary Captains granted the rank of Major: A. G. Anderson, R. W. P. Jackson, A. W. G. Woodforde, E. F. G. Ward, A. K. Cosgrave, C. D. Faulkner, R. J. B. Madden, R. S. Barker, A. Dick, G. Muir, E. Tawse, A. E. Quine, J. Donald, W. J. Johnson, R. S. Miller.

Temporary Captains retaining the rank of Captain: G. N. Kirkwood, E. R. Stone, R. L. Sinclair, A. L. McGrury, J. Dulberg, D. W. Smith, B. C. Ewens, J. J. Armistead, J. E. Barnes, L. H. Skene, A. Cleland, F. G. Gibbs, J. P. P. Inglis, R. H. Maingot, J. R. Davies, R. M. Lang, L. D. Cohen, L. Gray, J. Allan, M. Culpin, R. H. Fleming, J. C. Padwick, A. W. T. Whitworth, A. F. Wright, R. W. Telford, A. R. Wightman, A. B. Cooke, F. J. Whitelaw, J. H. Fryer, B. B. Noble, R. T. Grant, W. F. O'Regan, S. Rodin, C. F. Dillon-Kelly, A. Graydon, J. T. Titterton, H. P. Shackleton, G. Riddoch, D. Young, C. B. Tudehope, J. B. Fisher, A. D. Blakely, W. Simpson, C. H. L. Rixon, E. Gofton, E. W. N. Hobhouse, G. F. May, A. E. Hardy, C. Gordon, T. J. Lydon, H. O. West, W. H. Trethowan, H. Spurway, A. Robertson, R. C. McQueen, C. Salkeld, P. L. L. Craig, A. B. Lindsay, P. Ashe, F. O. Stedman, E. M. Condy, F. Penny, W. P. Miles. Temp. Hon. Capt. J. M. Bremner (retains the honorary rank of Captain). Temporary Lieutenants retaining the rank of Lieutenant: H. T. O'Neill, S. F. Breakey, A. I. Girdwood.

Canadian Army Medical Corps.

Temp. Major J. A. Lussier and Temp. Capt. E. E. Locke retire in the British Isles.

Temp. Capt. A. J. Fisher relinquishes the acting rank of Major.

The British West Indies Regiment.

The undermentioned relinquish their commissions: Temp. Surg.-Capt. A. G. McKenley and retains the rank of Surgeon-Captain. Temp. Surg.-Lieut. F. A. Norton and retains the rank of Surgeon-Lieutenant.

South African Medical Corps.

Temp. Major R. N. Pringle relinquishes his commission on ceasing to be employed and retains the rank of Major.

Temp. Capt. E. A. Leviseur relinquishes his commission on ceasing to be employed, and retains the rank of Captain.

SPECIAL RESERVE OF OFFICERS.

Capt. A. W. Russell relinquishes his commission and is granted the rank of Major.

Captains relinquishing their commissions and retaining the rank of Captain: J. F. Lyons, A. B. Austin.

Capt. J. H. Neill relinquishes his commission.

Capt. W. G. H. Cable to be Major.

Capt. D. M. Marr relinquishes the acting rank of Major.

Capt. W. Donald to be acting Major.

Lieutenants to be Captains: J. W. W. Newsome, B. L. Slater, V. D. Wyborn, V. Buchan, A. C. Hill, J. A. Ross, D. C. Bowie, A. J. Macartney, D. Ferguson, J. A. Dawson, A. I. Meek, J. Morrison, G. W. C. Dunlop, R. B. MacGregor, H. J. Parish.

TERRITORIAL FORCE.

Major (acting Col.) T. Kay relinquishes the acting rank of Colonel on vacating the appointment of Assistant Director of Medical Services.

The undermentioned relinquish the acting rank of Lieutenant-Colonel on ceasing to be specially employed: Majors (acting Lieut.-Cols.) A. C. Goodwin, T. Frankish; Capts. (acting Lieut.-Cols.) A. C. Pearson, F. Darlow, and T. C. Clarke.

Capts. (acting Majors) J. Taylor, T. S. Worboys, H. Pinto-Leite, E. L. D. Dewdney, A. G. Hendley, A. B. P. Smith, C. W. T. Baldwin, and G. B. Buchanan relinquish the acting rank of Major on ceasing to be specially employed.

Capts. (acting Majors) relinquishing the acting rank of Major: G. Stevenson, W. T. P. Meade-King, F. Ellis.

Capts. R. W. Swayne and B. J. Alcock to be acting Majors whilst specially employed.

Capt. T. J. Faulder to be Major.

Capt. C. Nyhan relinquishes his commission and is granted the rank of Major.

Capt. S. Shepheard relinquishes his commission and retains the rank of Captain.

1st Eastern General Hospital: Major (acting Lieut.-Col.) L. Humphry relinquishes the acting rank of Lieutenant-Colonel on ceasing to be specially employed.

3rd Southern General Hospital: Capt. J. F. Robinson is restored to the establishment. Capt. (acting Major) R. E. Humphry relinquishes the acting rank of Major.

5th Southern General Hospital: Capt. (acting Lieut.-Col.) J. Blackwood relinquishes the acting rank of Lieutenant-Colonel on ceasing to be specially employed and to remain seconded.

2nd London General Hospital: Major (Bt. Lieut.-Col.) T. D. Acland is restored to the establishment.

4th London General Hospital: Capt. (acting Major) W. Turner relinquishes the acting rank of Major on ceasing to be specially employed.

2nd London Sanitary Company: Lieuts. I. Walker and F. Evans to be Captains.

Attached to Units other than Medical Units.—Major T. Frankish to be acting Lieutenant-Colonel whilst specially employed.

ROYAL AIR FORCE.

Medical Branch.—Wing Cmdr. (acting Group Capt.) T. D. C. Barry is transferred to unemployed list.

Flying Officers to be Flight Lieutenants:—J. Ferguson, T. M. Davies.

Capt. W. H. H. H. Bennett (Captain, R.A.M.C., T.F.) relinquishes his commission on ceasing to be employed.

Squadron Leader (acting Wing Commander) F. F. Muecke, Capts. W. H. Payne, J. Duffin, G. W. Clark, Lieut. O. P. Turner, Flying Officers P. A. Dormer and C. Lambrinudi, Flight Lieuts. P. T. J. O'Farrell, I. de B. Daly, and J. E. Cox are transferred to the unemployed list.

Dental Branch.—Flying Officers to be Flight Lieutenants: S. C. Turner and A. Williams.

THE HONOURS LIST.

The following awards to medical officers are announced:—

M.B.E.—Surg.-Cmdrs. G. E. Duncan, A. Gaskell, C.B., and H. W. Gordon-Green, R.N.; and Surg.-Lieut. A. G. L. Reade, R.N.V.R.

In a despatch describing events in Syria and Palestine, subsequent to the conclusion of the armistice with Turkey on Oct. 31st, 1918, received from Field-Marshal Sir E. Allenby, Commander-in-Chief of the Egyptian Expeditionary Force, the following reference to the Medical Services appears:—

The Medical Services have dealt successfully with the difficulties of evacuation over long distances in a country of undeveloped communications; and have combated with excellent results the chief scourge of Syria and Palestine—malaria. I desire to mention the good work of Major-General A. E. C. Keble and Major-General Sir R. H. Luce, as Directors of Medical Services at various periods.

FOREIGN DECORATIONS.

American.

Distinguished Service Medal.—Surg.-Vice-Admi. Sir W. H. Norman, K.C.B.

Belgian.

Ordre de la Couronne.—Chevalier: Temp. Capt. J. R. Rees, R.A.M.C.

Croix de Guerre.—Temp. Capt. (acting Maj.) W. S. S. Berry, O.B.E., M.C., R.A.M.C.; Capt. (acting Lt.-Col.) J. M. A. Costello, R.A.M.C. (T.F.); Temp. Capt. (acting Maj.) W. S. Danks, 97th Fd. Amb., R.A.M.C.; Capt. L. A. Dingley, R.A.M.C. (T.F.); Lt.-Col. (temp. Col.) O. W. A. Elsner, C.B.E., D.S.O., R.A.M.C.; Temp. Capt. (acting Maj.) T. Ferguson, 42nd Fd. Amb., R.A.M.C.; Capt. (acting Maj.) J. D. Fiddes, M.C., 89th Fd. Amb., R.A.M.C. (T.F.); Lt.-Col. G. J. Houghton, D.S.O., R.A.M.C.; Maj. and Bt. Lt.-Col. (temp. Lt.-Col.) F. D. G. Howell, D.S.O., M.C., R.A.M.C.; Capt. I. R. Hudleston, D.S.O., 136th Fd. Amb., R.A.M.C.; Temp. Capt. (acting Maj.) J. Jack, M.C., 28th Fd. Amb., R.A.M.C.; Capt. and Bt. Maj. (acting Lt.-Col.) F. R. Laing, R.A.M.C.; Temp. Capt. G. E. Lindsay, M.C., R.A.M.C.; Temp. Capt. C. W. B. Littlejohn, 140th Fd. Amb., R.A.M.C.; Lt.-Col. (temp. Col.) L. N. Lloyd, C.M.G., D.S.O., R.A.M.C.; Temp. Capt. J. B. Mason, R.A.M.C.; Temp. Capt. J. C. Robb, 108th Fd. Amb., R.A.M.C.; Lt. (acting Maj.) L. S. C. Roche, M.C., 138th Fd. Amb., R.A.M.C.; Capt. (acting Lt.-Col.) J. Rowe, M.C., 163rd Fd. Amb., R.A.M.C.; Capt. (acting Maj.) H. A. Rowell, M.C., R.A.M.C.; Capt. H. Seddon, R.A.M.C. (T.F.), attd. 87th Fd. Amb., R.A.M.C.; Temp. Capt. (acting Maj.) H. C. Watson, M.C., 102nd Fd. Amb., R.A.M.C.

French.

Légion d'Honneur.—Chevalier: Maj. G. W. W. Ware, D.S.O., R.A.M.C.

Croix de Guerre avec Etoile (en Argent).—Capt. R. Burgess, D.S.O., R.A.M.C. (T.F.); Temp. Capt. (acting Maj.) T. A. Lawder, 24th Fd. Amb., R.A.M.C.; Capt. P. J. Ryan, M.C., 24th Fd. Amb., R.A.M.C.

Croix de Guerre.—Temp. Capt. F. P. Montgomery, M.C., R.A.M.C.; Capt. J. A. A. Pare, M.C., 11th Canad. Fd. Amb., C.A.M.C.; Temp. Capt. (acting Maj.) F. B. Winfield, R.A.M.C.

Médaille d'Honneur avec Glaives (en Vermeil).—Maj. W. D. C. Kelly, D.S.O., R.A.M.C.; Temp. Capt. H. T. Retallack-Moloney, R.A.M.C.; Maj. T. C. Ritchie, R.A.M.C.

Médaille des Epidémies (d'Or).—Lt.-Col. A. R. Aldridge, C.B., C.S.I. C.M.G., R.A.M.C. (R.O.); Maj.-Gen. Sir H. R. Whitehead, K.C.B.

Médaille des Epidémies (en Argent).—Temp Capt. G. D. Eccles, M.C., R.A.M.C. (T.F.); Temp. Capt. D. L. Williams, M.C., R.A.M.C.

Hellenic.

Order of the Redeemer.—Officer: Col. E. T. F. Birrell, C.B., C.M.G., A.M.S. (late R.A.M.C.).

Order of George I.—Officer: Surg.-Cmdr. T. W. Myles, R.N.

Military Cross.—2nd Class: Temp. Capt. W. K. McIntyre, M.C., R.A.M.C. *3rd Class:* Temp. Capt. G. P. B. Huddy, R.A.M.C.; Capt. B. E. Potter, R.A.M.C. (T.F.).

Medal for Military Merit.—3rd Class: Col. E. T. F. Birrell, C.B., C.M.G., A.M.S. (late R.A.M.C.).

Italian.

Croce di Guerra.—Capt. (acting Maj.) M. Coplans, D.S.O., O.B.E., R.A.M.C. (T.F.).

Portuguese.

Military Order of Avis.—Grand Officer: Maj.-Gen. Sir W. W. Pike, K.C.M.G., D.S.O. *Commander:* Maj. and Bt. Lt.-Col. P. Davidson, C.M.G., D.S.O., R.A.M.C.; Temp. Maj. (acting Lt.-Col.) T. B. Unwin, O.B.E., R.A.M.C.; Surg.-Cmdr. P. H. Broyden, R.N. *Chevalier:* Capt. (acting Lt.-Col.) G. S. Parkinson, D.S.O., R.A.M.C.

Roumanian.

Order of the Star of Roumania (Grand Cross).—*Chevalier:* Temp. Capt. F. C. Robbs, M.C., R.A.M.C.

Order of the Crown of Roumania.—Officer: Capt. A. C. H. McCullagh, D.S.O., R.A.M.C. (T.F.). *Chevalier:* Capt. H. L. Garson, O.B.E., M.C., R.A.M.C. (S.R.); Capt. F. Jefferson, R.A.M.C. (S.R.); Capt. J. N. L. Thoseby, R.A.M.C.

Serbian.

Order of St. Sava.—3rd Class: Maj. J. Ward, C.M.G., D.S.O., R.A.M.C. (T.F.). *4th Class:* Temp. Capt. R. A. Wilson, R.A.M.C.

Appointments.

HORT, VIOLET G., has been appointed Government Bacteriologist in the Isle of Man.

MACMILLAN, J., M.B., Ch.B. Glasg., D.P.H., Medical Officer of Health for Woolwich.

RYLAND, A., F.R.C.S. Edin., Assistant Surgeon to the Central London Ear, Nose, and Throat Hospital.

SHERA, A. G., M.D., B.Ch., B.A. Cantab., M.R.C.S. Eng., L.R.C.P. Lond., Honorary Clinical Pathologist, Princess Alice Memorial Hospital, Eastbourne.

Salford Royal Hospital: STONE, F. W., M.B., B.S., Resident Surgical Officer; FORT, C. W., M.B., Ch.B. Manch., House Physician; ELLIS, O. J., M.B., Ch.M., House Surgeon; SPARROW, L. W., M.B., Ch.B. Manch., Junior House Surgeon.

Certifying Surgeons under the Factory and Workshop Acts: WORMALD, T. L., M.D., D.P.H. Durh. (Darlington); TAYLOR, J. M., M.D. Glasg., D.P.H. (Thorne); SMITH, T. B., M.B., Ch.B. Glasg. (Abertillery); POWER, V. A., L.R.C.P. & L.R.C.S. Irel. (Borrisoleigh).

Vacancies.

For further information refer to the advertisement columns.

Battersea General Hospital, Battersea Park, S.W.—Res. M.O. £200.

Bedford County Hospital.—Res. M.O. £150.

Belgrave Hospital for Children, Clapham-road, S.W.—Two Asst. S.'s. Also H.P. and H.S. £100 and £75.

Bethlem Royal Hospital, Lambeth-road, S.E.—Hon. Neurologist. Also Jun. Asst. P. £350.

Birkenhead Borough Hospital. Jun. H.S. £170.

Birmingham Municipal Anti-Tuberculosis Centre.—Sen. Asst. Tuberc. O. £650.

Bradford Royal Infirmary.—Two H.S.'s. £200.

Brighton, Royal Sussex County Hospital.—Asst. Path. £200.

Brookwood, near Woking, Surrey Lunatic Asylums Visiting Committee.—First Asst. M.O. £600.

Cheltenham Eye, Ear, and Throat Free Hospital.—Asst. S. £400.

Cumberland Education Committee.—Two School Dentists. £350.

Derby, Derbyshire County Council.—Maternity and Child Welfare M.O. £450

Derby, Derbyshire Education Committee.—Sch. M.O. £450.

Dorchester, Dorset County Council Education Committee.—Schoo Dentists. £400.

Dunfermline, Carnegie Dunfermline Trust.—Sch. M.O. £400.

Durham County Council.—Five Asst. School M.O.'s. £600.

Eastbourne, Princess Alice Hospital.—R.M.O. £175.

East Riding Education Authority.—Sch. Dent. £350.

Frimley, Brompton Hospital Sanatorium.—Med. Supt. £600.

German East Africa Occupied Territory.—M.O.'s. £400–£20–£500.

Glasgow Eye Infirmary.—Res. H.S. and Res. Asst. H.S. £100 and £75.

Glasgow, Scottish Western Asylums' Research Institute.—Director. £600.

Gloucester, Gloucestershire Royal Infirmary and Eye Institution.—Asst. S.

Grimsby and District Hospital.—H.S. £300.

Hampstead General and North-West London Hospital, Haverstock-hill, N.W.—Two P.'s to Out-Patients, P. for Dis. of Skin, S. to Out-patients, and Clin. Asst. in the Nose, Ear, and Throat Department.

Hereford County and City Mental Hospital.—Senior Asst. M.O. £350.

Hospital for Consumption and Diseases of the Chest, Brompton, S.W.—S. H.P. for six months. 30 gs. Asst. Res. M.O. £150. Asst. P. £250. Asst. in Dept. of Path. £250. Part-time Asst. in Dept. of Path. £250.

Hospital for Diseases of the Throat, Golden-square, W.—Hon. Asst. S.'s.

Hospital for Epilepsy and Paralysis, Maida Vale, W.—Hon. Psychologist, Hon. Ophth. S., and Hon. Asst. P.

Hospital for Sick Children, Great Ormond-street, W.C.—Res. Med. Supt. £200. Also Asst. Cas. M.O., H.S., and H.P. All £50.

Hospital for Women, Soho-square, W.—Phys. Con. Also Hon. M.O.

Huddersfield Royal Infirmary.—Asst. H.S. £100.

Hull Royal Infirmary.—Sen. H.S. £200.

Ilford Urban District Council.—Female Asst. M.O.H. £400.
Italian Hospital, Queen-square, W.C.—Hon. Ophth. Surg.
Leamington, Warneford, Leamington, and South Warwickshire General Hospital.—Res. H.S. £200.
Leeds General Infirmary.—Res. M.O. £150. Res. Obstet. O. £50. Also Res. M.O. at Ida and Robert Arthington Hospitals. £60. Two H.P.'s and Two H.S.'s.
Leicester Royal Infirmary.—H.P. £250.
Liverpool, Hospital for Consumption and Diseases of the Chest, Mount Pleasant.—Asst. M.O. and Pathologist. £175.
London, County of.—Coroner for S.E. District. £1186 4*s.*
London Hospital, Whitechapel, E., Genito-Urinary Department.—Clin. Asst. One guinea per session.
London Lock Hospital and Rescue Home, 283, Harrow-road, W., and 91, Dean-street, W.—Hon. S. to Out-patients.
Manchester Royal Infirmary.—Jun. Anæst. £200.
Manchester Royal Infirmary, Central Branch, Roby-street, Manchester.—Res. Surg. O. £200.
Manor House Orthopædic Hospital, North End-road, Hampstead, N.W.—Res. S.O. £500.
Middlesex Hospital, W.—Asst. Anæst.
Middleton-in-Wharfedale Sanatorium, near Ilkley.—Asst. Res. M.O. £325.
Mothers' Hospital, 153-163, Lower Clapton-road, E.—Res. M.O.
Mount Vernon Hospital for Consumption and Diseases of the Chest, Northwood, Middlesex.—Asst. Res. M.O. £200.
National Hospital for the Paralysed and Epileptic, Queen-square, W.C.—Radiologist.
Newcastle-upon-Tyne, Hospital for Sick Children.—Jun. Res. M.O. £200.
New South Wales, Department of Public Instruction.—Prinpl. M.O. £900.
Nottingham General Hospital.—Asst. Secretary. £250.
Oldham Royal Infirmary.—Third H.S. £200.
Paddington Green Children's Hospital, London, W.—H.P. and H.S. £150 each.
Preston, Lancashire County Council.—Asst. Disp. Tuberc. O. £550.
Prince of Wales's General Hospital, Tottenham, N.—H.P. and H.S. £200. Also Jun. H.S. and Jun. H.P. £120.
Queen Mary's Hospital for the East End, Stratford, E.—H.S. £150.
Reading, Berks Education Committee.—Sch. Dent. £400.
Reading, Royal Berkshire Hospital.—Hon. Asst. P.
Royal Free Hospital, Gray's Inn-road, W.C.—Hon. Anæst. Also Cas. O. (£100) and Registrar.
Royal National Orthopædic Hospital, 234, Great Portland-street, W.—Surg. Registrars. 100 gs. Also Hon. P.
St. Bartholomew's Hospital.—Asst. Administrator of Anæsthetics.
St. Marylebone Infirmary.—Asst. M.O. £200.
St. Marylebone General Dispensary, 77, Welbeck-street, Cavendish-square, W.—Res. M.O. £150.
Sheffield City Education Committee.—Sch. Dent. S's. £400.
Sheffield City, Winter-street Tuberculosis Hospital.—Asst. Tuberc. O. £300.
Sheffield Royal Infirmary.—H.S. for Ear, Nose, and Throat. £150.
South London Hospital for Women, South Side, Clapham Common, S.W. Female Asst. S. and Temp. Asst. S.
Stroud General Hospital.—H.S. £200.
Sunderland Royal Infirmary.—Sen. H.S.. Two Jun. H.S.'s. and H.P. £250 and £200 respectively.
Sutton Coldfield Borough.—M.O.H. and Sch. M.O.
Taunton and Somerset Hospital, Taunton.—Res. Asst. H.S. £150.
Victoria Hospital for Children, Tite street, Chelsea, S.W.—In-patient P. and Two Out-patient P.'s.
Weston-super-Mare, Somerset County Education Committee.—School Oculist and Med. Inspec. £450.
Whitehaven and West Cumberland Infirmary.—Res. H.S. £180.
Willesden Urban District Council.—Two Dentists. £400.
Worcestershire Asylum, Barnsley Hall, Bromsgrove.—Asst. M.O. 8 gs. per week.

THE Chief Inspector of Factories, Home Office, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Almondsbury, Leven, and Maldon.

Births, Marriages, and Deaths.

BIRTHS.

EVANS.—On Sept. 21st, at Devonshire-place, W., to Dorothy, wife of Arthur Evans, O.B.E., M.S., F.R.C.S.—a son.
FENTON.—On sept. 11th, at Croxley Green, the wife of W. J. Fenton, M.D., F.R.C.P., of a daughter.
MINNITT.—On Sept. 19th, at Kremlin-drive, Stoneycroft, Liverpool, the wife of R. J. Minnitt, M.B., Ch.B., of a son.

MARRIAGES.

ELGEE—HUNT.—On Sept. 18th, at the Parish Church, West Bridgford, Nottingham, Lieutenant-Colonel (temporary) Samuel Charles Elgee, R.A.M.C., to Dorothy Elizabeth, eldest daughter of Mr. and Mrs. Geo. Hunt, of West Bridgford.
WHITESIDE—DOUAY.—On Sept. 15th, at W. Eperlecques, France, James Whiteside, M.B., Ch.B., Captain, R.A.M.C., to Hélène, only daughter of M. et Mme. Charles Douay, Ecole de Garçons, Nord, France.

DEATHS.

CLARKE.—On Sept. 19th, at Newham House, Truro, Huntley Clarke, M.R.C.S.
DOBSON.—On Sept. 17th, at Pendyffryn Hall, Penmaenmawr, Major George Magill Dobson, R.A.M.C., in his 50th year.
VASEY.—On Sept. 19th, at Twyford Abbey, Park Royal, Fleet-Surgeon C. Lyon Vasey, R.N. (ret.), aged 70.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births Marriages, and Deaths.

Medical Diary for the ensuing Week.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

LONDON HOSPITAL MEDICAL COLLEGE, in the Clinical Theatre of the Hospital.

A Special Course of Instruction in the Surgical Dyspepsias will be given by Mr. A. J. Walton:—

MONDAY, Sept. 29th.—4.30 P.M., Lecture XVII.:—Technique and Complications of Gastric Operations.

FRIDAY.—4.30 P.M.. Lecture XVIII.:—Surgical Anatomy of the Liver and Gall Bladder. (In the Dissecting Room.)

Communications, Letters, &c., to the Editor have been received from—

A.—Mr. E. A. Armstrong, Lond.; Major A. Abrahams, R.A.M.C.; Sir R. Armstrong-Jones, Lond.; Rt. Hon. C. Addison, M.D., M.P.; Mr. R. J. Albery, Lond.; Dr. F. P. Atkinson, Bexhill-on-Sea.
B.—Birmingham, Medical Officer of Health of; Mr. A. Blackhall-Morison, Lond.; Board of Agriculture and Fisheries, Lond; British Orthopædic Association, Lond.; Mr. C. A. Bang, Lond.; Messrs. Butterworth and Co. (India), Ltd., Calcutta; Dr. R. Blair, Lond.; Dr. J. Blomfield, Lond.; Prof. F. A. Bainbridge, Lond.
C.—Dr. A. V. Clarke, Leicester; Major O. Challis, R.A.M.C.; Dr. H. P. Cholmeley, Forest Row; Dr. J. Catton, San Francisco; Dr. H. W. Crowe, Harrogate; Messrs. W. Collins, Son, and Co., Lond.; Dr. F. J. Cutler, Hastings.
D.—Dr. J. L. Dick, Lond.; Dr. Prof. L. Durante, Genoa.
E.—Dr. R. Eager, Exminster.
F.—Dr. E. C. Fernoulhet, Herne Bay; Col. N. Faichnie, A.D.M.S.; Major E. R. Fothergill, R.A.M.C.; Dr. D. Forsyth, Lond.; Capt. N. B. B. Fleming, R.A.M.C.; Factories, Chief Inspector of, Lond.
G.—Prof. Galli, Bellano; Dr. H. M. Gerson, Lond.; Guy's War Memorial Fund, Lond., Hon. Sec. of; Dr. A. D. Gardner, Broxbourne; Lieut.-Gen. Sir John Goodwin, K.C.B., C.M.G., D.S.O.; Capt. E. W. Gregory, R.A.M.C.(T.F.)
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BOOKS, ETC., RECEIVED.

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Mind and its Disorders. A Text-book for Students and Practitioners of Medicine. By W. H. B. Stoddart, M.D. 3rd ed. 18*s.*
Field Ambulance Organisation and Administration. By Lieut.-Col J. H. Neil, N.Z.M.C. Pp. viii. + 125. 4*s.* 6*d.*

MACMILLAN AND CO., London and Canada.
The Whole Truth about Alcohol. By George E. Flint. With introduction by Dr. A. Jacobi. Pp. 294. $1.50.

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The Style and Literary Method of Luke. By H. J. Cadbury. Pp. 72. 5*s.* 6*d.*

PALESTINE EXPLORATION FUND, Hinde-street, London, W.1.
Hygiene and Disease in Palestine in Modern and Biblical Times. By E. W. G. Masterman, M.D. With preface by A. Macalister. Pp. 70. 2*s.* 6*d.*

PUTNAM'S (G. P.) SONS, London.
Married Love. By Marie C. Stopes, D.Sc. With Preface by Dr. Jessie Murray and a Letter from Prof. E. H. Starling, F.R.S. 7th ed., revised and enlarged. Pp. 190. 6*s.*

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1805, SPRUCE STREET, Philadelphia, Pa., U.S.A.
Transactions of the American Pediatric Society, May, 1918. Edited by O. M. Schloss, M.D. Vol. XXX. Pp. 332.

Notes, Short Comments, and Answers to Correspondents.

THE AERIAL COMBATANT:*

HIS PSYCHOLOGY AND NERVOUS PHYSIOLOGY CONSIDERED IN THE LIGHT OF ATHLETIC ANALOGIES.

BY THE LATE H. G. F. SPURRELL, M.A., M.B., B.CH. OXF.,
CAPTAIN, R.A.M.C.

PART I.

WHEN early in the war it was recognised that a powerful aerial army was required, the training of a large number of men began. It was suspected that the number of men who proved disappointing under training could be reduced if a scientific method of selection could be evolved. This expectation has been to a great extent justified; but failures under training still occur, and a very large proportion of these failures can be traced to nervous and psychological causes. This may be partly due to the practical difficulty of detecting nervous weakness when selecting a flying officer, but his duties make such unusual demands upon his nervous system that chance may easily subject even the soundest material to a breaking strain. Much has yet to be learned regarding the selection of the right nervous organism, how to train it when selected, and how to estimate its recuperative powers when damaged. In the light of some small experience gained on the selection and invaliding boards of the Royal Air Force, and in no less instructive daily intercourse with members of a great school of military aeronautics, I have attempted to sketch out the nervous physiology of training for aerial combat, and to trace to underlying physiological bases some of the factors which make for success or failure in the flying combatant. Such an attempt may be profitable, though the risk must be faced of saying much that is already tediously obvious.

Training of the Flying Fighter.

A flying fighter must undergo three distinct stages in his education. Firstly, he must be taught to fly. He must learn to fly instinctively with no more conscious mental effort in handling his machine than a cavalryman of the old school exerted in keeping his seat and managing his horse. Secondly, he must learn to fight, to drop his bombs with calculation and precision, but making many of the incidental movements subconsciously, and to manipulate his machine-gun with a trained hand but a free mind. Thirdly, having learned both to fly and to fight in the air, he must learn to use military intelligence. He must be able to watch what is going on in a mêlée, decide quickly whether to single out an opponent or go to the help of a friend, to use judgment when bombing in choosing objectives, and he requires special knowledge for gaining, interpreting, and using information which may come in his way. The old-time trooper with a firm seat and a fine wrist was a long way from being the complete cavalryman, and the skilful aeronaut who is dextrous with weapons has yet to become a flying soldier. With all this to learn the tyro's nerve centres need extensive and progressive development, and it may clarify one's ideas to translate the process into physiological terms.

Learning to fly may be compared with learning any other motor accomplishment. The required movements have to be worked out in consciousness by the highest cerebral mechanism. The muscles which are to perform them have to be developed to the strength requisite for acting harmoniously in the new combinations. When the movements have become clear conceptions which can be consciously carried out by trained muscles, these conceptions have to be passed down the scale of nervous controlling centres until they become the property of reflex centres and can be performed automatically, not merely without requiring thought, but without interrupting thought. Learning to fly is closely analogous to learning to bicycle: the stages of the nervous education are the same. It is also analogous to learning to walk, but here the analogy cannot be pressed so far. Evolution has not, either by structural adaptation or by nervous tendencies, given man an hereditary predisposition to fly analogous to the predisposition to walk. In flying and in bicycling the brain acts consciously by selecting, inhibiting, and adapting the established reflexes to new purposes; but the process is not shortened by any of those instincts which urge a child, in whom intelligence is only dawning, to make persistent efforts to walk when its mother thinks it would still be much better employed crawling.

Man's capacity for education is, however, conditioned by his evolutionary history. While most animals have specialised for a particular place in nature, in man we see an animal capable, by means of tools and education, of specialising himself for many diverse requirements. One of his most recent attempts at self-education is for the air. He has not the exclusive specialisation for flight which evolution has produced in the bat, so if he is to fly he must attain his end by devising mechanical means and training his nervous system, and this he has proved himself capable of doing. But, together with the intelligence and versatility which enable him to elaborate movements, man must have a very complete power of delegating the controls elaborated by his brain to lower automatic centres. Only so can he prevent his brain from becoming overloaded and keep it free to deal with present needs. Only so, moreover, can he shorten his reaction times and so gain the necessary rapidity for meeting the emergencies of daily life.

The Education of the Nervous System.

In actually learning to fly one may trace three distinct stages in the education of the nervous system. First there comes the cerebral stage. The way in which the machinery of the aeroplane works is constantly before the mind and the muscular movements to produce the right effects in it have to be thought out and performed consciously, with mental effort. Errors become slighter as time goes on, because adaptations are taking place in the receptive side of the nervous system, which is learning to deal with a multitude of unfamiliar afferent stimuli. The first stage passes gradually into the second, or the stage of transition. During this stage automatic action is becoming perfected and conscious direction more and more restricted. The pupil learns, by flying with an instructor in a machine, under what is known as "dual control." Now the relations of the instructor to his pupil are very closely parallel to the relation of the higher centres of the brain to the automatic centres lower down the scale in the central nervous system. The progressive education of the pupil and the reflex centres, and the continually lessening intervention on the part of the instructor and cerebral cortex present no very strained analogy. But during the stage of transition there is a period when the aeroplane, though described officially as under dual control, is, physiologically speaking, under treble control. The nervous system of the instructor works harmoniously and may be regarded as a unit; but the pupil, whose conscious and automatic nervous centres have not yet arrived at a satisfactory division of labour, is more accurately to be described as two individuals than one. The conscious and subconscious nervous centres competing for the control of the muscles resemble a fussy, over-anxious instructor continually trying to help a wayward and awkward pupil. From what instructors tell me I gather that this is the least safe period in the pupil's career, and one can well understand that between the three controls the machine may come to the ground.

With the arrival of the third stage flying becomes instinctive. The pupils thinks of what he will do, not how he will do it, and he learns by observation and experiment how all manner of various conditions affect his doing what he wants to do. Even now, of course, the pupil is not immune from mishap. The venturesome type may come to grief by attempting things which are beyond his powers or the structural capacity of his machine; the careless type may have an accident because he "lets his wits go woolgathering." The weakness of this type lies in a deficient power of inhibition. It cannot repress irrelevant stimuli which interfere with the essential action. Both these types prove unsafe flyers in spite of a successful education, but they are essentially deviations from the normal. In the normal man the most dangerous source of accident is a mental disturbance in which the cerebral hemispheres endeavour once again to take charge of actions which have for some time past been performed automatically.

The extreme difficulty of attempting and the disastrous results which often follow an attempt to perform consciously actions which have become reflex are matters of common knowledge, and it is only when we attempt to perform actions with especial care that we learn how many are really automatic. We have all seen the well-educated man, who can speak fluently in ordinary life, splutter, become incoherent, and break down when called upon to make a speech or to interview someone of importance. This is because he is making conscious efforts to speak clearly and grammatically, and we have all seen him recover miraculously when the impudence of a heckler distracts his attention from the cares of elocution, or the urbanity of a great man "sets him at his ease" by diverting his mind in the direction of the subject of his interview. When a pilot can fly by established reflexes which only need general orders from the presiding intelligence it is very perilous for the volitional centres to attempt suddenly to resume control. They can

* This paper was received by us after the author's death. Reference to the obituary notice in THE LANCET of Jan. 4th (p. 42) will show the high qualifications which Captain Spurrell brought to his task.

resume control cautiously and deliberately in efforts to improve by practice movements which are not yet perfect, but that is another thing. Self-consciousness is the disturbing element. For instance, a man unused to flying in Egypt knows that the shimmering sand and blinding glare will make the conditions of his landing unlike those of grass in a grey light, and he may easily worry about this, and as he approaches the ground allow his conscious volition to hamper his reflexes with disastrous results. On the other hand, a man suddenly perceiving an obstacle when on the point of landing, will make the complex movements necessary to avoid it quite subconsciously and automatically. Whether he comes off safely depends on extraneous circumstances. In himself he has every chance.

This return of conscious control after reflex control has been established is like an old instructor, long retired from flying, going up with one who was formerly his pupil, but is fully proficient and in much better trim than himself. If the older man nervously insists on flying in dual control and in interfering whenever a difficulty confronts them the pair will probably crash. If the veteran is there solely as a passenger to use his experience for strategic purposes and occasionally offer advice on major tactics they will probably do excellent work. When the pilot's nervous system has been so trained that the reflex mechanism can carry out the requirements of intelligent volition, yet the higher centres which act consciously can be relied on never to embarrass the highly educated reflexes by untimely interference, then the third stage in his education is completed and he can be said to have learned how to fly.

THE METROPOLITAN WATER-SUPPLY DURING APRIL, MAY, AND JUNE, 1919.

ON the whole, the month of April this year maintained its tradition in regard to rain, and, in fact, the rainfall in the Thames basin was 2·76 inches, being 1·02 inches above the average mean rainfall for that month during the previous 36 years. The Thames water was at times more or less coloured and turbid. Nevertheless, the results of the chemical examination showed that, generally speaking, all three raw waters (Thames, New River, and Lee) showed an improvement in quality as indicated by the albuminoid nitrogen, permanganate, turbidity, and colour tests. The filtered waters also showed an improved chemical quality compared with the previous month, and the samples collected at the different works were clear and bright and free from suspended matter. The results compared favourably also with the averages of the previous year. Bacteriologically the Thames and New River raw waters contained fewer and the River Lee raw water more bacteria than their respective averages for 1918. The filtered waters were satisfactory from this point of view. May was a dry month, the rainfall being 0·64 of an inch, being 1·34 inches below the average mean rainfall for this month during the previous 36 years. The Thames and New River raw waters showed a deterioration in quality by chemical tests. The raw waters of the Thames and Lee contained fewer and the New River more bacteria than their respective averages in 1918. The filtered waters were again satisfactory. June was also a relatively dry month, with the rainfall standing at 1·06 inches, being 1·13 inches below the average mean rainfall for that month during the previous 36 years. All three raw river waters showed, generally speaking, improved quality judged by chemical and physical tests. All three proved to contain fewer bacteria than their respective averages for the year 1918. There were no typical *B. coli* in 100 c.cm. of the water in 72·4 per cent. of the filtered samples derived from the Thames, 36·8 per cent. from the Lee, and 77·9 per cent. from the New River. Judged on this high standard the Lee filtered water was inferior to the others. It is interesting to note that the April report is stamped "Local Government Board," while those for May and June are marked "Ministry of Health."

THE MISCEGENATION OF SHAKESPEARE.

TO the physical anthropologist miscegenation must mainly be of interest as it affects human anatomy. As the school of Professor Keith points out, the races of the British Isles are "much of a muchness" from the point of view of craniology—they are practically all dolichocephalic; where long-headed races become intermixed that school does not regard the resultant types as it would half-breeds or mulattos. In more historic times than those of physical anthropology the question of miscegenation becomes important from the point of view of brain-differentiation and culture-drift. For the long heads are not all alike either in mental heredity or civilisation.

Shakespeare is the fine flower of English genius. That "Shakespear" was a pseudonym, chosen by Bacon to express the fact that the Author of the Plays brandished the spear of Pallas in the great age of Elizabeth is a suggestion combated by the history of surnames. Shakespeare, a common name in Warwickshire, is Shalk's Byre, "the farm of the villein," who, in that part of England, was descended from a Romanised Briton. That Shakespeare, the man, was a very pronounced instance of miscegenation is an attractive supposition. His genius has been described as both Teutonic, or Northern—i.e., Anglo-Saxon—and as British, Celtic, or rather Cymric, for he combines virility with mystery in a degree unknown to the German Goethe on the one hand or the old Welsh bards on the other. We may grant, at least, that Shakespeare was a combination of Saxon and Briton, and that this is reflected in his masterpieces. What, however, were the ancient Britons, from whom the shalks of the byre descended? According to the late Sir Jonathan Hutchinson, who bases himself on Dr. Baynes, the Shakespeares, as well as Mary Arden, the poet's mother, came of Roman stock. In a very acute short paper, published in "The Home University" (October, 1898) Sir Jonathan Hutchinson points out a number of considerations in favour of this position "During the Roman occupation," he says, quoting Baynes, "Warwickshire was the site of several central Roman stations, of which the fortified camps of Tripontium and Præcidium, on the line of the Avon, were the most important. A Roman road crossed the Avon at Stratford, and radiating north and south, soon reached some of the larger Roman towns of the west, such as Uriconium and Corinium. Between these towns were country villas or mansions, many of them being, like those at Woodchester, magnificent palaces covering as much ground as a whole town. The entire district must in this way have been powerfully affected by the higher forms of social life and material splendour which the wealthier provincials had introduced." Nay, more, according to Coote ("Romans of Britain," published in 1878), the whole of Britain, but especially the West, remained essentially Roman to a late date, the country having been everywhere measured out and allotted by *agrimensores* to scions of good Roman stocks (Julii, Cornelii, &c.), whose descendants founded our western squirearchy in preference to the rude Saxon invaders of the fifth and succeeding centuries. Is it too extravagant to suppose that through the Arden family, at any rate, Shakespeare derived the fissures of his brain and the aquiline cast of his features? The Iberian or Mediterranean type lingers everywhere in rural western England. Often it startles us by its Roman nobility of contour. Who has not come upon a face suggestive of Julius Cæsar in the lonely fields along the remote Upper Thames at Bampton or in any remote region of Wessex?

Sir Jonathan Hutchinson closes his article with the remark: "Of Shakespeare's symmetrical and noble face we will only say that it is not one which could be easily matched in Denmark, and still less so in Germany. The resemblance of George Eliot's face to that of Savonarola has often been remarked, and as regards character a close parallel might be drawn between Savonarola and Fox." George Fox, a man of profound and original spiritual genius, was born at Fenny Drayton, George Eliot (Miss Evans—a Welsh name) at Nuneaton, Samuel Butler, author of "Hudibras," in the same neighbourhood, the Shakespeares were a Snitterfield stock, the Ardens came from the Forest of that name. These places were within 15 miles of Coventry. They represent a pocket of exceptional genius, due to a mixture of culture-drifts and the survival of a higher mental type. A similar pocket has been discovered by Professor Keith in the countryside of the Hunters, which produced in its day a remarkable group of medical men of genius.

EDUCATED HOME HELPS FOR THE MIDDLE CLASSES.

THE attention of practitioners is called to a newly established bureau for the provision of educated middle-aged women, experienced in housekeeping and holding certificates in first aid, home nursing, and invalid cookery, to help in private houses in cases of illness. No actual nursing will be undertaken, but such work as looking after the house and children, invalid's food, shopping, and mending. It is anticipated that the scheme will be doubly useful to women of slender means who desire part-time employment, and, on the other hand, to professional women living alone in a flat attended by a charwoman only, or to mothers with large households whose convalescence is too often retarded by worry about the servants, the shopping, and the children's meals. In the modern servantless middle-class homes, where at most the services of a daily maid are available, an illness of the mistress which confines her to bed is likely enough to bring household affairs to a full stop, as well as to create a period of added strain to the invalid. We take it that the new help is intended to replace the former ubiquitous unmarried sister or sister-in law, who is nowadays usually a busy bachelor woman and seldom available in emergency. The payment will be not less than 10*d.* an hour or 5*s.* a day with food, or 25*s.* a week with all meals. All applications for educated home helps or from suitable candidates for employment should be made to the Women's Industrial Council, 6, York Buildings, Adelphi, W.C. 2.